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METHODS OF RESEARCH IN EDUCATION.[1]

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The aspect of educational research, which the Executive Committee was so kind as to offer to me, is that of methods; specifically, that of methods which are promising for immediate application by instructors in departments of education not yet abundantly supplied with material facilities. The topic is a congenial one, and I have taken it up with interest, though I have, I think, no illusions as to the value of the suggestions I shall be able to make, except perhaps as incitements to discussion.

A fact that meets us on the threshold of a practical consideration of methods and which must determine our subsequent course is that in actual research it is the problem that dictates the method, and not the method the problem; or, more exactly, it is the problem, the state of knowledge of the field in which the problem lies, the interest of the investigator, and the facilities at his disposal. If our question, for example, is one of lighting, heating and ventilation, we find ready at hand the precise quantitative methods of physics and chemistry, and where they can be used there is usually no excuse for others. If it is a matter of grade of intelligence and advancement relative to age, we have the Binet-Simon test-scale. If it is the rôle of inheritance, we must gather statistics and calculate the correlations between parent and child. If it is the general character of children's impulses and interests, we are com-

[1]Read at the Wellesley meeting of the New England Association of College Teachers of Education, December 2, 1911.

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SCHOOL OF PEDAGOGY

pelled to rely on the systematic observation of single children, on the questionnaire, and upon collation of biographies. In the case of problems of practical administration we must frequently make use of comparative studies of the experience of others. In still other cases—since pedagogy is a practical science and cannot always wait for the methodical solving of its problems—we are obliged to fall back on crude empiricism, the method which the comparative psychologists have called that of "trial and error," the method of guessing at what ought to be done and trying it on.

If the problem dictates the method, it is with a handful of problems that I ought to begin what I have to say about methods; and as I am to deal with methods readily accessible to college teachers of education, I shall confine myself to college problems, for, while many of us lack special laboratories and experimental schools, we have each of us *ex officio* a college under our hands, and are in some measure responsible for the solution of its problems. I do this with the more confidence also, because I believe that these problems are for the most part typical, both in nature and in the methods of investigation by which they must be approached, of educational problems all along the line.

Here, then, is a group of problems, already somewhat worked upon, which can be treated by purely statistical methods on the basis of data to be found in the college registrar's office or readily to be obtained from other sources.

1. What are the causes of failure in college work? Studied by means of the office records and information as to the college life and activities of the men who are dropped from college for poor standing. This question has been studied by President Schurman, Professor Miner and others.
2. The correlation between high standing in college and later success in the professional schools, and the correlation between success in certain special studies, as in history or in science, and later high standing in the law or medical school.

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Both of these have been studied by President Lowell.

3. The correlation between high standing in mathematics or the classics and success in other directions. This has been studied by many different champions of these studies as means of mental discipline.
4. The extent to which a student's academic fate is sealed before his entrance to college, as shown by the correlation between scholastic records in the high school and the college. Studied by Professor Dearborn.
5. The inverse correlation between the habit of smoking and success in college work. Investigated some time ago by one of the Clark students.

Such problems as these are the easiest upon which to begin educational research, because the questions can be stated clearly and the material has already been gathered. The following are of the same sort, and, so far as I know, have not yet been studied to the point of publication:

6. Is there any relation between age of entrance to college and success in college work?
7. How far, if at all, can maturity and other similar advantages compensate for imperfect preparation for admission?
8. What, in general, is the effect on the work of a student in the graduate or professional schools of having taken the college course in three years? (President Lowell has gathered data on this point.)
9. A study, similar to that on college laggards, on men who do exceptionally well in college, and the causes of their success—their age, home conditions, participation in college activities, social standing among their mates, physical vitality, moral and religious character, etc.
10. Relative standing of men who concentrate on a few subjects and those who scatter over a good many.

Statistical Methods. In the use of all statistical methods there are, of course, certain essential precautions to be taken in gathering the original data and in its subsequent manipulation. And there is always necessary a certain circumspection in the interpretation of the final results. The most essential of these points of care are: First, to be sure that the data represent facts; then not to draw inferences from too few cases; not to mix figures which do not really stand for facts of the same kind; and never to forget that numerical results may frequently be explained with equal ease in several different ways. The first of these points is too obvious to need illustration. The second was sometimes illustrated by President Wright by a case in which, in a study of the ratio of criminality to population in a certain city, the Turks appeared to be the most criminal, having a record of 300 per cent., which, however, was in reality due to the fact that there was but one Turk in the city, and he had been arrested three times. An instance of the third, coming under my own notice, was that of lumping the statistics of conversion of young men and young women, which gave the age of most frequent conversion at a point above what it was in reality for the one group and below what it was for the other. In illustration of the last, I may say that it appears that students in small classes in college get higher marks on the average than those in large classes, but it will not do to conclude that this is due to the better pedagogical conditions in small classes, because smaller classes are generally in advanced subjects and the poorer students may have dropped by the way; or, since advanced subjects are usually elective, the small classes may be attended by those only who have a spontaneous interest in the subject. For the same reason the common inference, from the fact that high scholarship in all subjects is more frequent among those that have taken Latin, Greek and mathematics in the preparatory school and the lower college classes, that these subjects furnish a general training of a superior kind is not justified, for the weaker students may steer clear of them or fail if they take them, *i. e.*, these studies may act as a sieve instead of a gymnastic; or they may be taken chiefly by students from homes where the cultural standards are higher, *i. e.*, students from more successful

families, students endowed by inheritance with physical and mental powers above the average. For the detailed precautions to be observed in statistical matters, one would go, of course, to works on statistics; and naturally, in educational research, to Thorndike's "Mental and Social Measurements," or his "Educational Psychology."

I may mention, however, one other matter of importance in this connection, and that is the dependence to be placed upon the marks for college standing on which we rely for our evidence of success. There is, unfortunately, a widespread suspicion as to the value of college marks, not only on the part of students who succeed usually in getting a "gentleman's grade," but on the part of those who have to do with such marks for other purposes. This is to be regretted, for it is by no means unavoidable.

As now managed, college marks in different subjects probably do give some index of the relative success of students in those subjects as judged by their several instructors. A paper graded 95 by one instructor is probably distinguishably better than one graded 85 by the same instructor, but it is by no means certain that it is better than a paper graded 75 by another instructor whose subjective grade-scale is different. That such differences are common has been shown by Cattell, Meyer, Dearborn and others, and can easily be verified by anyone who cares to take the trouble to compare the marks assigned by his colleagues. This makes combination of the marks unsafe and their comparison often misleading.[2]

The variation comes largely from the fact that college instructors have usually, when they begin, no special training in assigning marks, and no effort is made to urge or assist them toward uniformity of standards. Improvement naturally results through social pressure when each instructor knows how his own marking habits compare with those of his colleagues and what in the long run the proportionate frequency of the marks of various grades ought theoretically to be, which can be shown

[2]Difference of grades from instructor to instructor in any single year is, however, not by any means a sure sign of difference in subjective standards, even when the instructors deal with parallel sections in the same subject. It may be due to an unfortunate chance in the grouping of students, as was brought out by Dr. Norton of Harvard in the discussion following this paper.

by the publication of the proportion of marks of each grade assigned by each instructor at the last previous examination period, or his average for the past year or two, together with the theoretical proportions, and, if necessary, with a simple explanation of what the figures mean. It is even possible, as Dean Ferry of Williams has done, to calculate, from a sufficiently large collection of marks by different instructors, a numerical coefficient by which the marks of the aberrant can be reduced to the proper general standard.

Besides this general lack of uniformity in the meaning of the grades assigned, there is also another habit of instructors which is useful perhaps pedagogically, but injurious to the marks as data for pedagogical research. I mean the habit of using the marks as rewards and punishments, giving the student who deserves encouragement a higher grade than the bare quality of his work would justify, and shading downward the mark of a student who has not worked so faithfully as his instructor believes that he ought. Of the same sort is the custom of certain instructors to cut down the scholarship mark as a penalty for absence. These customs introduce into the records factors which tend to irregularity, and which it is impossible to remove. It would be much better if the students could be graded separately for each particular aspect of their work—scholarship, diligence, attendance and other matters if necessary—and the marks combined after filing in the registrar's office according to an established system. We should then have data on scholarship which would be purer than under the present system.[3]

After making sure of the reliability and adequacy of the original data, the next precaution is, as I have said, to avoid misleading mixtures of the data having reference to different classes of cases. In studying the correlation of the age at entrance to college with success in college work, it would, of course, be necessary to discriminate those who came late to col-

[3]It would perhaps be possible to test the efficiency of college marks as general indexes of ability by testing their correlation with the grading of the students in (1) the skilful use of English, (2) their skill in discovering and exposing the error in fallacious arguments, (3) with their grades when graded by their fellow-students after the manner used by Cattell in his study of American Men of Science.

lege through ill-health or through the necessity of earning money to pay their way from those who came late from sheer stupidity; and in interpreting the result it would be necessary to consider the various distractions and other causes of poor success in college work and to determine whether these were operative equally at all ages, before one could arrive at a statement with reference to age alone. Similarly, if it should appear that three-year men were less (or more) successful than four-year men in their later professional studies, it would be necessary, before concluding that the three-year course was in general a bad (or a good) thing, to consider the type of men who now take it. The value of statistical results lies in their just and skilful interpretation, and their interpretation is often an especially serious matter in the complicated cases with which educational researches have to deal.

The Questionnaire. In the case of many other problems of interest to educators the data are not already in existence, but must be secured by some sort of a census-taking or questioning. If, for example, one should undertake a study of the heredity or of the present home conditions of the bright or dull men in college, or, for light on vocational training in college, should try to find what proportion of students enter with a definite vocational bent, how many change their life-plan during college, and how many follow, after graduation, the plan which they formed in college, it would evidently be necessary to depend chiefly on data furnished by the students themselves in interviews or in response to a schedule of questions.

The method of the questionnaire is one that can be applied with all degrees of rigidity and laxness, and can furnish accordingly data of all degrees of value from those which are susceptible of rigid mathematical treatment and yield results of practical certainty to those which cannot fairly be made to yield any quantitative statement at all, and are perhaps overpraised if regarded as worthily suggestive. The ideal questionnaire is one which asks for information which the questionee is sure to possess and willing to give, and which he can state briefly and unequivocally—which asks questions, for example, that can be answered by "yes" or "no," or by definite statements of facts or figures.

When it goes beyond questions of this sort and asks for matters of personal history or of opinion and belief, it soon reaches a point where a quantitative treatment of the data is impossible, or, if possible, is often misleading. The best that can then be done is to gather the material into characteristic groups or types and to attempt little beyond a liberally illustrated description of these.

A second important point is to see that the questions are answered by all of the group which you have under consideration, or, if it is too large for that, by a perfectly fair and adequate sample of the whole group. A set of questions with reference to conversion answered by a class of clergymen would, of course, be hardly a fair basis for inference as to the religious experiences of the man in the street.

A good many years ago the English Society for Psychical Research gathered many replies to a questionary, of which the chief question was as follows: "Have you ever, when believing yourself to be completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice; which impression, so far as you could discover, was not due to any external physical cause?" In case of an affirmative answer, a description of the experience was asked, with particulars as to the time and circumstance. The question was carefully worded, and seems tolerably plain; the answers ran into the thousands, and the returns were conscientiously and even critically worked over, and yet they left the real facts of the matter in many respects uncertain.[4] The figures seemed to show that women are more subject to such experiences than men, but it is not sure that the experiences are not as frequent with men, for they very likely forget them more frequently in their busier and more varied lives, and so report them less often. Even the frequency of the experience among both men and women is in doubt. As the number of returns rose, the proportion of affirmative answers fell off, showing probably that the collectors had quite unconsciously not taken people at random, but asked those first whom they judged would be interested to answer the questions, and

[4] See criticism by Parish, "Hallucinations and Illusions," New York, 1902, pp. 83 ff.

this often meant people who had had such experiences. Later, when these interested people were exhausted, the proportion of those asked who had not had such experiences increased. Even the great preponderance of visual hallucinations over those of the other senses, which the figures seem to show, has been called in question on the ground that those of vision are better remembered than those of the other senses, and evidence to support the contention has been drawn from other portions of the data themselves.

If complex matters, where misunderstandings are easy and where forgetfulness or inattention is liable to make the replies unreliable, are to be studied, it is well that the questioner make his inquisition in person and explain and cross-question as occasion demands. A few cases thus thoroughly worked out at first hand are, of course, of more value than a much greater number collected carelessly and embodying only such things as the questionee chanced at the moment to think of and set down.

Two small questions which might possibly repay investigation in this way I may mention in passing:

1. The moral code of students with reference to questions involving the college or behavior toward other students and its sanctions. This has been touched upon experimentally by Sharp in a paper some years ago in the *American Journal of Psychology*.

2. Students' methods and habits of study—not so much as to time spent as to the manner in which the work is done.

Experimental Methods. Much more difficult in execution, but also more certain and definite in results, are the methods of direct experimentation. Of these there are, roughly, three types:

1. The painstaking introspective study of various forms of the learning process under laboratory conditions. This is hardly to be distinguished from experimental psychology, and most of it has so far been done in the psychological laboratories. I refer to such work as that of Meumann and other German investigators on economic methods of memorizing, and to such work as that of Bryan and Harter, Swift, Book

and others in this country on the acquirement of skill in telegraphy, ball-tossing, shorthand, typewriting, and the like. Such experiments as these require the resources and technique of the laboratory, and are not likely to be undertaken by teachers of education unless they are both fortunately situated and have strong psychological leanings.

2. Then there are the studies of individual differences and the testing of capacities of various kinds, which promise in the end to give us a science of psychography—in other words, a schedule and a procedure by which we can take the psychic measure of a man in all important particulars and inventory all his characteristic qualities. This work, in anything like completeness, is yet in its beginning, and is connected in its recent developments especially with the name of Stern, in Germany. In a simpler way it has given us the Binet-Simon test-scale for determining the psychological age of backward children. To this type also would belong the tests and measurements worked out so fully in Whipple's "Manual of Mental and Physical Tests." And closely connected with this type of experimentation, though important enough to deserve the name of a method by itself, is Thorndike's work in the establishment of standard scales of excellence for the quantitative measurement of excellence in penmanship and elementary English, and that of Courtis and others for work in elementary arithmetic. Many of the experiments of this type also call for equipment and technique, though the practical value of the studies of the individual pupil and the simplicity of the test material or its use of schoolroom products bring it nearer to the daily business of the student of education.

3. The experiments of the third type are strictly pedagogical—experiments made under school conditions, with the ordinary materials of the classroom, in order to answer strictly pedagogical questions. Such, for example, is the work of Lay in Germany on the first steps in number, of Winch in England on the possible transfer of the educative effect of work on the fundamental operations of arithmetic to improvement of mathematical reasoning, of Gilbert in our own country on the teaching of zoology in such a way as to keep in view its practical bearings as compared with the teaching of the same sub-

ject as pure science, and of Pearson on the teaching of spelling —the last three reported in the JOURNAL OF EDUCATIONAL PSYCHOLOGY.

In this sort of experimentation pedagogy comes to her own. The essence of the method is to submit to educative processes which are different in one clearly defined particular two groups of pupils which are, as regards native ability, previous schooling and all other essential items, as much alike as they can be made, and to compare results, stated in some definitely quantitative way. If, for example, a teacher of the mother tongue wished to determine whether facility in composition is to be more readily acquired by much practice in writing or by memorizing extracts from the best models (as a French experimenter has seemed to find it), he would proceed as follows: He would first divide his class into two sections, having regard to marks previously obtained in composition, in such a way that the average ability was as nearly as possible the same in both sections. He would then for a semester, say, demand a daily theme of one section and of the other an equal time spent in committing to memory and reciting aloud an assignment of good prose, while care was taken to secure as great uniformity as possible in all other work done by the two sections. At the end of the semester test themes would be required of both sections—or perhaps several themes—and the productions would be marked and compared, and the value of the methods judged according to the results. It would be desirable, probably, that marks be assigned for more than one quality; for example, for correctness as well as for facility of diction, and that the papers be graded by someone ignorant of the purposes of the experiment and of the membership of the sections. For greater certainty the treatment of the sections should be reversed during the second semester and the results again compared.

In all such experiments the attitude of the instructor is, of course, a very important factor, but, if he is worthy to be an investigator at all, he will know enough not to spoil his own experiment by carelessness in the management of it or by bias in estimating its results.

The comparison of the products in such an experiment would

be possible on the basis of gradings according to the usual school methods, but it would be improved in certainty and precision if it could be carried out by several readers, and especially if it were checked by the use of a standard scale of attainment in English composition against which each individual's production could be measured off and assigned a definite value.

The construction of such scales is worth a little consideration, for they promise to bring within range of quantitative measurement many phenomena the proposal to measure which has until recently seemed visionary, if not absolutely chimerical. To Dr. Thorndike belongs the credit of having pushed forward as a pioneer in their construction. See his papers in the *Teachers College Record*, XI, No. 2, March, 1910, and the JOURNAL OF EDUCATIONAL PSYCHOLOGY, II, No. 7, September, 1911, 361-368.

The production of a reliable scale is no easy matter, and requires the co-operation of a number of conscientious judges, but it is worth the labor. In substance the method is this: Given a large number of samples of the product in question, say 1000 specimens of handwriting, of all grades of quality from the very poorest to the very best. The whole set is classified individually by a number of competent judges (perhaps 30 or 40) into 10 groups as nearly equally different in quality as each judge can make them. The record of the classes in which each specimen is placed by each judge is kept, and by calculation gives an average rating for each specimen depending on the judgments of all the judges—a rating which it is fair to assume is very much more reliable, that is, is very much more nearly right than the rating of any single judge.

From the whole 1000 specimens thus rated it will be easy to find one or more examples which correspond almost exactly with the ideal grades 1, 2, 3, 4, etc., which measure off by equal distances the range of difference from the worst to the best specimens. These taken by themselves can be preserved as permanent samples, and together form the standard scale, which can be photographed or otherwise reproduced, and can be had by anyone who needs to grade handwriting. Any new piece of handwriting to be graded can be compared with these

and be assigned its grade as it falls above or below or exactly coincides with one of the samples. Such a scale does not, of course, enable us to perceive differences which we cannot perceive without it. It is not a microscope, but a footrule. It should enable us, however, to give our impressions of difference an objective and quantitative statement which can be apprehended by any other worker who has a standard series like ours.

The invention of such scales is, in my opinion, full of promise for the scientific study of educational problems. I believe with Thorndike that "if a number of facts are known to vary in the amount of anything which can be thought of, they can be measured in respect to it," and I am hopeful that the time may yet come when it will be possible to meet critics with figures and to demonstrate in a quantitative fashion that one sort of college training is better than another.

SHALL WE TEACH SPELLING BY RULE?

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Though a comparatively large number of common words and their modifications are subject to carefully-phrased rules of spelling, one may seek in vain among educators and texts for a convincing answer to this question. One college professor assures us that it is evident that rules are worthless.[1] Another says, "There are a few simple rules for spelling which should have prevented at least half of the mistakes" (made in certain examination papers or essays).[2] The *Natural Speller and Word Book,* copyright by A. S. Barnes & Co., 1890, does not contain a single rule, and there are other modern spellers that take a similar attitude. In others the dose varies greatly in amount and frequency. The *Normal Course in Spelling,* published by Silver, Burdett & Co., stands close to the other extreme, with 18 rules in the course of 18 consecutive lessons, 7 of them on plural formation. And even then it is forced to omit the time-honored "*i* before *e* except after *c*," etc. The length and simplicity of rules in different texts varies from "Nouns in *o* after a vowel add *s* for the plural," with no exceptions, to "In monosyllables and words accented on the last syllable, a final consonant after a single vowel doubles before a suffix beginning with a vowel (*x*, *k* and *v* are never doubled), except when, in the derivative, the accent is thrown from the last syllable of the primitive," followed by the almost ubiquitous "other exceptions."

It was to test, if possible, the worth of these guides that the following list of 50 words was framed. It was intended to be a fair test of spelling ability, since it contains only those words

[1]Educational Review, 42 : 176-79.
[2]Independent, 67 : 346.

which intelligent people have frequent occasion to use in written discourse.

1. ancient
2. seizure
3. foreign
4. freight
5. their
6. conceivable
7. piercing
8. thievish
9. grievance
10. sieve
11. achievement
12. nervous
13. encouragement
14. awful
15. argument
16. peaceable
17. changeable
18. courageous
19. shoeing
20. singeing
21. mileage
22. pitiable
23. furious
24. greedier
25. fanciful
26. loveliest
27. buried
28. plenteous
29. conveyance
30. essayist
31. betrayal
32. dismayed
33. paid
34. daily
35. concurrence
36. regretted
37. conference
38. rebellion
39. gases
40. stoppage
41. quitting
42. benefited
43. quarreling
44. potatoes
45. folios
46. music
47. frolic
48. derrick
49. tying
50. dying

It will be seen that this list is composed of words which exemplify seven rules in spelling and their exceptions.

Words 1-11, inclusive, are calculated to test a rule which is often expressed as "*i* before *e* except after *c*, or when sounded like *a*, as in *neighbor* and *weigh*. Words 7-11, inclusive, illustrate the first clause of the rule, word 6 the second and words 4 and 5 the third; words 2 and 3 are exceptions to the first clause, *ancient* is an exception to the second clause.[3]

Words 2, 6-9, inclusive, and 11-21, inclusive, are designed to cover a rule which may be given thus: "Final *e* is dropped before a suffix beginning with a vowel; but it is retained (1) when the suffix begins with a consonant, (2) when a word in *-ce* or *-ge* suffixes *-able* or *-ous*, (3) to keep the pronunciation of a word constant, (4) to maintain the identity of a word." Words 2, 6-9, inclusive, and 12 illustrate the dropping of *e; mileage* is an exception; words 11 and 13 show retention under case (1); 14 and 15 are exceptions to case (1); words 16-18, inclusive, come under case (2); words 19 and 20 stand for cases (3) and (4).

Words 22-34, inclusive, call into use the rule on final *y*. "Final *y* after a consonant changes to *i* before all suffixes not beginning with *i;* final *y* after a vowel is usually retained." Words 23-27, inclusive, illustrate the first part of the rule, *plenteous* being an exception; words 29-32, inclusive, illustrate the last part of the rule, while *paid* and *daily* are exceptions.

[3]It is contended that exceptions to the various rules are not over-represented in this list. Reed's *Word Lessons* or any exhaustive speller with carefully organized lists of words will substantiate this.

Again we may say, "Monosyllables and words accented on the last, ending in a consonant after a single vowel, double that consonant before a suffix beginning with a vowel, unless the suffix changes the accent." Words 35-42, inclusive, are considered here. *Gases* is an exception, *conference* shows the change of accent upon changing the suffix, and *benefited* is a word not accented on the last.

Words 44 and 45 were intended to bring out the less familiar rule that "Nouns in *o* after a vowel add *s* for the plural"; *music* and *frolic*, with *derrick* as an exception, show that polysyllables ending in the sound of *k*, in which *c* follows *i* or *ia*, do not add *k*; the last two words (49 and 50) illustrate the rule that words in *ie* substitute for them *y* before *ing*.

Special effort was made to include words with only one authorized spelling. Unfortunately, after the first test it appeared that some authorities allow *quarreling* two *l's*. Accordingly, it was left out of account in the consideration of the rule for the final consonant. *Payed* was marked incorrect, inasmuch as that word was probably not the one meant by any person tested.

By courtesy of Dr. H. A. Watt the test was tried in three sections of Freshman English in the University of Wisconsin. These students were a semester behind their class in English because of deficient preparation. The chief reason for using them in the test was the fact that over 50 per cent. of the 70 papers submitted[4] were from students who, in February previous to the giving of this test in November, had completed the special course known as Subfreshman English, a course in which among other things special emphasis is laid on spelling, the rules in general being thoroughly taught according to Wooley's *Mechanics of Writing*. It should be said, however, that no instruction in spelling rules had been given during the present semester, though individuals had been referred to rules as their work required. The instructors gave this test as a part of the regular work, graded the words and noted the results.

[4]Seventy-six papers were received in all, but those of four foreigners, one person who came late to the class, and another person evidently of very defective hearing, were thrown out. In the other papers there was scarcely any difficulty from lack of understanding.

The written instructions given each instructor were as follows:

I. Spell the following words, numbering from 1 through to 50. (Then followed the list given above.)

II. Without changing any spellings, write all rules you consciously used in spelling this list, and after each rule the number of the words on which you used it, as 1st, 17th, etc. Do not be troubled by apparent exceptions to any rules you have in mind. Practically all have their exceptions.

III. Write all rules you see exemplified by this list, but which you did not think of while writing. If you can't give the rule for any case exactly, give its essence, or tell what it is about, even in a vague way. We want all you know about spelling rules.

IV. If you should be unable to give any data under II or III, answer whether anyone has ever tried to teach you any rules for spelling.

A desire to please the instructor may have induced some to place rules not consciously used in the class consciously used. Some were intentionally or unintentionally guilty of mixing the two classes, but they were exceedingly few. There is very slight evidence that the students were writing for the benefit of the instructors. One who fell somewhat below the average apologetically says: "The writer will admit that his spelling is not up to standard, but when he has any literary work to do his trusty Webster is always beside him." On the whole, the students were commendably frank.

About two weeks later, almost the same test was given to 39 seniors and 30 freshmen in Wisconsin Academy, a secondary school under the control of the University. The word *daily* was replaced by *solos* coming under a different rule, and *quarreling* by *exhibition* coming under the same rule. The first four rules brought out in the test had been taught to these pupils about two months before, though in a simpler form than that given above, by a teacher of experience and

ability. A list of 10 to 20 words exemplifying these rules had been worked through daily in the classes, some 10 successive days in the freshman section and possibly 3 days in the senior section. The test was given about six weeks after the rules had been dropped as a class exercise. The fourth instruction to the university freshmen was therefore struck out and the academy seniors asked to give frankly their opinion of the value of spelling rules to them, without regard for the supposed ideas of the teacher. No such question was put to the academy freshmen. The regular teacher gave this test also, as it was felt that the results would be in every way more trustworthy.

As each of the seven groups of words were corrected separately, it followed that the papers fell into three classes: (1) those whose writers had consciously used a rule in writing that particular group of words; (2) those who later recognized a rule governing that class of words, but did not consciously employ it, and (3) those who could not recall, even with the members of the group placed practically in juxtaposition in the list, that a rule applied. The records of these three classes is compared for each rule separately, for each rule is a problem in itself. One rule may be very helpful; another not at all.

A possible objection to this method of comparison may be foreseen. It may be said that the showing of rules is prejudiced by charging up against them the errors of those who cited the rule partially or incorrectly. But in answer it may be said that, if the rules naturally lead to confusion and error when handled by good teachers, the case against them is all the more clear.

Again, it may be said that the poorer students damaged the showing of rules by citing their imaginings as rules. This is disproved by the fact that the 56 college students who recalled any form of any rule averaged 85 per cent. on the whole test, while the other 14 averaged only 81 per cent. Practically the same was true of the academy students. It therefore does not appear that the poorer spellers conjured up rules to harm the evidence in favor of rules.

But someone may say that the figures just cited answer the whole inquiry, so far as the efficiency of rules is concerned, in the affirmative. Each rule, however, we repeat, must be judged on its own merits, and not the whole body of rules *in toto*. Moreover, each rule must be judged as to its efficiency not by whether the word as a whole is spelled correctly, but by whether the part of the word covered by the rule is correct. For instance, all words involving the diphthong *ie* or *ei* will be marked correct so far as the observance of the rule is concerned if the members of the diphthong are in proper order, even though there may be a mistake elsewhere in the word.

In estimating the efficacy of rules with the academy students it was found impossible to allow for misunderstanding of the words. Some persons occasionally spelled another than the

one given, and did it correctly, but a great many words were simply "spelled at" or omitted. Certain arbitrary rulings became indispensable to avoid endless and unsatisfactory computation. For example, if an *ie-ei* word was omitted altogether, the members of the diphthong of course did not appear in proper order, and an error against the rule was charged. But if final *e* was omitted, if the rule was followed by writing the word without *e* or even by omitting the word, no error was charged. It was felt that such a course was not unfair with reference to the object of the investigation. Pupils knowing rules of spelling and those not knowing the rules would, so far as there is reason to judge, be equal in breadth of vocabulary and in acuity of hearing. And these two factors are the only ones which could enter into the misunderstanding or omission of words.

Results for seniors and freshmen of the academy will be combined so as to secure a fairly large group, one almost exactly the size of the one tested at the university. There is little difference between the academy classes in respect to the efficiency of rules. They were taught by the same teacher, and there does not seem any good reason for separating the results. The freshmen remembered much more of the rules than the seniors, which is not at all strange when we consider that the freshmen are just from the elementary school, with its large amount of drill work and exact memorizing. The freshmen attained a much lower average than the seniors with regard both to general spelling ability and the observance of the rules. Their immaturity seemed more than to offset their greater knowledge of the rules—knowledge in the sense of amount memorized.

In the writer's opinion it is impossible to separate absolutely the conscious functioning of a rule from its automatic functioning. A rule might function consciously and very usefully for a time and then cease to function consciously. Still, it would have served an advantage in fixing certain forms. It is for this reason that the records of all those having any knowledge of the rule are presented together. Some advocates of rules may go so far as to assert that those unable to cite any sort of a rule might realize a benefit from the rule be-

fore it was forgotten. Of this the writer is very doubtful even for a stretch of years, and it certainly would not hold in the case of those subjected to this test. The recency with which they had been taught the rules certainly gave the latter every possible advantage. The figures in the accompanying table

OBSERVANCE OF THE RULES.

TABLE OF RESULTS.

	Conscious of rule while writing.				Unconscious of rule while writing.				Combination of all citing a rule.				Unable to cite any rule.			
	Academy.		University.		Academy.		University.		Academy.		University.		Academy.		University.	
Rule.	Cases.	Av. %	Cases.	Av. %	Cases.	Av. %	Cases.	Av. %	Cases.	Av. %	Cases.	Av. %	Cases.	Av. %	Cases.	Av. %
ie-ei.....	16	79	25	87	15	71	5	87	31	75	30	87	38	73	40	86
final *e*.....	31	82	20	87	21	78	9	94	52	80	29	89	17	82	41	88
final *y*.....	11	74	18	94	18	67	13	95	29	70	31	94	40	73	39	91
final consonant.	15	78	32	88	27	72	2	87	42	74	34	88	27	75	36	84
final *ie*.....									5	80	18	95	64	61	52	69

are based only upon adherence to the rule; this distinguishes them from all previous ones, which have been based upon correctness or incorrectness of the entire word. We shall be able to devote only a paragraph to the discussion of each group of words.

Curiously enough, most of the collegians who cited a version of the *ie-ei* rule as consciously used relied upon the word "Alice" and other mnemonic devices which gave a clue to only one or two of the 11 words. The slight superiority of those citing a rule does not, therefore, seem to be entirely due to the rule itself. Three made one or more errors by stating the wrong rule and following it; four made one or more by not following the rules they cited. No academy freshman cited the rule as recently taught, but four had it almost correct. Several of them said something about "When the word ends in *ie* or *ei*," etc., plainly mixing it with two of the other rules. Three seniors gave the rule substantially as taught, but nearly all the others who cited anything gave a version of something taught in earlier years, the "Alice" rule, etc. The rule seems more likely to stick as first learned. The favorable results in the academy tend to confirm the questionable advantage of the rule in the university. The greatest handicap to its effectiveness is probably the numerous exceptions.

Sixteen distinct rules came from the 20 collegians citing a rule for final *e* in conscious use. The most nearly complete was "Drop final *e* before a suffix beginning with a consonant or to preserve the identity of a word." The rule seemed to be too complex for most of the writers. They gave it in general outline, without any qualification, or gave some very special application only. Several who had the special case of *-ce* and *-ge* in mind fared far above the average. Three-fourths of the academy students remembered, or imagined they remembered, some part of this rule. About a dozen had it very nearly exact in the simple form in which it had been taught them, but their grade was not above the mean. By virtue of the higher average of those unconsciously using the rule, it obtained a slender advantage in the university, which it more than lost in the academy.

Several college students cited the rule for final *y* in acceptable form. The academy freshmen exceeded the seniors in its recall, both quantitatively and qualitatively. The seniors seemed little inclined either to use or to remember it. Two facts appear here in comparison. In the first place, while the observance of this rule was easiest of all for the college group, it was most difficult for the academy group. In the second place, the value of this rule showed an advantage of 3 per cent. in the university group, but it lost an equal amount with the academy students. The two phenomena coming together seem to show that more than simply the use of the rule is involved. The only explanation which occurs is that the group of words here in question might have been the subject of much greater emphasis with one teacher than with the other. That being true, the rule in all probability received more emphasis in the one group than in the other.

Several of the college students were able to approximate the rule for doubling the final consonant. In this case the citations were defective rather than incorrect. There seemed little in the rule to cause them to confuse or misapply it. About 15 of the academy freshmen and only 3 of the seniors quoted the rule almost as taught them, but they failed to show any better average than those who made defective or erroneous citations. The rule taught them, correctly applied, would have

given an average of over 83 per cent. instead of only 74 per cent. This throws somewhat under a cloud the superiority of the rule in the college group, but does not destroy it.

The little rule for the last two words of the list tells a different story. It applies to a class of words without exception. Thirteen of the 16 collegians who used it consciously, cited and applied it correctly. The academy students who had sometime learned it showed practically an equal advantage, but they were less successful in applying it, though four of them quoted it correctly. The rule on *music, frolic* and *derrick* was given by no one, so there was no chance for comparison. A few who tried to formulate a rule for the two or three plurals ran about 20 per cent. below their fellows.

The attitude of the college freshmen seemed generally unfavorable to rules. Teachers were charged with having laid but little stress on the rules, or with having failed to insist on their application till thoroughly understood. One writer said that he "knew most of the spelling rules, but they have become so indefinite in my memory that I am mixed up if I use them." Another says that he "attempted to learn rules for spelling, but thought it added to the difficulty." Four others declare, after giving one or more rules, that they have decided that the way the word "looks" is the best guide. One of them complains of the long list of exceptions. Four who had been in the Subfreshman English reported that they had lost almost all of the rules then taught them. One gives this rather amusing testimony: "I was greatly helped, but because of lack of practice they have grew vague." There is a very suggestive point here, which is, that it may be just as difficult after children have been spelling visually or automatically for several years to work them over to a logical basis as it is in language to work from an habitual-expression basis over to a grammatical basis. The academy seniors gave corroborative testimony on all points. Ten only of nearly 40 ascribed any value to rules.

To summarize, no one rule was professed to be known by half the university students, though over half of them had all these rules, and other besides, only the winter before, to say nothing of those who had been over the ground in the public

school. A trifle less than half of the academy students on the average had the courage to try to give the rules they had worked out only six weeks before. Let us deduct from this miserable showing of those who are conscious of the existence of a rule those who cited the rule so incompletely or erroneously as to make it positively bad. Let us then compare the residue of what little advantage (?) the knowledge of rules may confer on a few with the vast amount of time spent in teaching these rules at different times to all. Does it pay? The writer does not believe that a single rule which he tested demonstrated its efficiency, except the little one for the last two words of the list. It is at least evident that rules for spelling do not teach themselves; that if teachers do not insist upon their being learned they will be neglected; that they cannot be taught once and then dismissed from attention like an event in history; that thoroughness of digestion demands that they be given in widely-separated doses, and that they must be introduced, if at all, in the elementary school during the habit-forming period, while the pupil still spells reflectively rather than automatically. The presumption is even then against a favorable outcome, except with a superior teacher.

RETARDATION IN FIFTY-FIVE WESTERN TOWNS.

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Recently the writer had occasion to investigate the grade-age status of 17,279 children in the grades below the high school in 55 villages and smaller cities in Minnesota, and possibly the results may prove of interest and value to others.

A word about the towns themselves. They have, on the whole, excellent school systems, each having a high school, which, together, with the grades that sustain it, is inspected annually by the "State High School Inspector" to ascertain if the work done is such as to entitle it to "special State aid," which is granted annually to such schools as he approves because of their high standard of efficiency. The towns are widely scattered throughout the State, so as to represent every variety of social and industrial condition. Some are old (as Western towns go), others new; some are largely peopled by recent immigrants, others are almost exclusively American; some are principally engaged in manufacturing, some in lumbering, some in mining, while others are mainly agricultural. Yet, in spite of this wide range in the conditions surrounding the towns studied, the prevailing tendency among them, individually considered, is about the same, and the study yields a fine average for the State, which would not, I am convinced, be greatly modified if all the towns were included.

Only the pupils in the grades below the high school are considered, for the reason that the high school students are invariably promoted by *subjects,* and are required, in case of failure, to repeat only the study in which they failed; hence statistics as to retardation among them, in the sense that the

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TRAINING SCHOOL DEPARTMENT.

term is used concerning grade children, are not easily obtainable. Promotion by subjects obscures class and grade lines, and makes figures based upon retardation by *subjects* difficult to compare with figures based upon a grade or *year* of work. Then, again, most of the retarded pupils have become discouraged before the high school is reached, and, having nothing to fear from the truancy law, owing to their age, have dropped out of school altogether. So the problem of retardation becomes confused by the kindred problem of elimination in such a way as to make the study of either alone very difficult.

Dr. Ayres, in "Laggard's in Our Schools," sets up a certain standard for measuring the amount of retardation, which has been widely followed by others. By it children in the first grade are considered normal if they are not over eight years of age; in the second grade the norm is nine years, and so on. The reason for allowing that extra year in the first grade and in each successive grade is not given, beyond the bare statement in the text that the ages allotted to each grade are those used "by common consent." In the towns studied, at least, the practice is quite different. In each of them the children enter at six years of age or less, the number entering later than six being approximately offset by the number entering before they are six. The effect of the Ayres standard if applied to these schools would be to conceal one year's retardation for every child, possibly, during his progress through the grades.

In the actual administration of these schools the children do enter at six, spend a single year normally in a grade, and, unless retarded, having entered the first grade at six, they find themselves in the second grade at seven, and so on. Now, to illustrate how the Ayres standard conceals retardation, we have only to suppose that a child enters the first grade at six, and the second, the next year, at seven, and the third, the next year, at eight, but, failing to "make good" in that grade, he remains there two years, repeating and certainly retarded, yet

his age when he finally reaches the fourth grade at ten is normal under the Ayres standard, and under that system he would not show as retarded when he really is.

It is no doubt more correct than either the Ayres or the Minnesota method to follow the *progress* of each individual child, but the data for such a standard are not at hand in this State.

We might add that from the administrative point of view the State expects to provide each child with eight years of grade schooling, and no more. He is to begin this at the age of six, and from this point of view, if he waits till he is seven before entering, he is already behind the schedule. He will get through school one year later than he otherwise would, for the records show that a year once lost is rarely recovered; indeed, the same causes that operated to produce the lost year continue, with exceptions, to keep the child retarded. This is shown by the fact that during the year 1909-1910 in 96 school systems in Minnesota, with 40,710 children in the grades, only 400 promotions ahead of the schedule were made. At the same moment 4640 of the children were "repeaters." That is a ratio of 10 to 1. There is nothing to show whether the 1 per cent. thus promoted consisted of repeaters regaining their lost grade or of bright children who were skipping a grade. Probably there were some of both. At the same time, 59.3 per cent. of all the children enrolled were behind grade, so it must be evident that the number regaining a lost grade is relatively few. The child who enters late or loses a year will get out of school, therefore, that much later, and loses that much of his economically productive life, which is what the State has in mind in educating him at all.

The complete results of these investigations are given in Table A, which shows the grade-age status of 17,279 grade children in 55 towns in Minnesota. The data were gathered in the fall, and account only for children then actually enrolled. This makes the showing favorable to the schools, because some of the children who failed of promotion in the spring doubtless dropped out of school during the summer. Had the data been collected from the school records at the end of the year, the percentage of retardation would have been greater.

TABLE A.

Shows, grade by grade, and by sex, the per cent. of retardation.

	Numbers			Percentages					
				Retarded.		Normal.		Advance.	
Gr.	Total.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
1	2691	1436	1255	34.7	33.6	57.8	59.0	7.5	7.4
2	2065	1096	969	54.0	41.1	37.8	47.2	8.2	11.7
3	2164	1134	1030	61.1	53.7	33.1	38.0	5.8	7.4
4	2268	1134	1134	65.9	56.1	28.2	35.5	5.9	8.4
5	2129	1109	1020	68.8	63.2	25.2	29.8	6.0	7.0
6	1944	977	967	73.7	67.7	21.0	25.0	5.3	8.0
7	1862	929	933	70.4	65.9	24.3	27.1	5.3	7.0
8	2007	886	1121	74.0	67.0	30.5	26.4	5.8	6.6
	Total: 17,279.			Averages:	58.7		34.1		7.1

In studying this table one will note two things in particular, both probably contrary to popular opinion. First, the boys equal or exceed the girls in number in every grade up to the seventh, where they fall only four behind. It is in or at the close of the seventh grade, then, that the boy meets his decisive defeat. From then on the girls outnumber him, both in the eighth grade and, in fact, in all four years of the high school. Second, the retardation begins heavily in the *first* grade, and steadily increases, grade by grade, through the eighth grade, with the exception of the slight downward drop of the curve beginning in the seventh, which is practically overcome in the eighth. This drop is very likely due to the working of the law of elimination, and not to any change in the matter of retardation itself. A third matter, quite as one would have predicted, is that the retardation of the boys is greater than that of the girls from the very start, and remains so, grade by grade, to the end, varying from an excess of 1.1 per cent. in the first grade to 7 per cent. in the eighth grade.

The average percentage of retardation officially reported to exist in these schools, under their own standard of requirements, is 59.3. As I have said elsewhere before, when the course of study and the other demands made are such that only 40.7 per cent. of the children can and *do* meet them, we have an alarming state of affairs. To be rated as abnormal, under these conditions, is the usual or normal state.

There is an important factor, never alluded to, so far as I have discovered, in the literature of the subject, and that is

the practice, almost uniform among superintendents, of promoting a child at the end of two years in a given grade whether his work actually merits it or not. This practice conceals a considerable amount of the very worst sort of repeating, and likewise, by forcing a child on through the grades artificially, reduces the seeming amount of retardation. Similar to this practice, in its effects, is another—that of promoting a child "on trial" when he does not quite meet the requirements, but for one reason or another he is permitted to continue with the class. Once so permitted to advance, they are kept in this unearned position by the very same forces that caused them to be placed there. They are rarely reduced to their proper grade. This tends to reduce the apparent amount of retardation also.

While, as we have shown, the Ayres method of computing retardation would not hold true for these towns, nevertheless, for the sake of comparison, we have reduced the data used to that scale, and give the results in Table B.

TABLE B.

This is Table A reduced to the Ayres standard for retardation.

	Numbers			Percentages					
				Retarded.		Normal.		Advance.	
Gr.	Total.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
1	2691	1436	1255	14.6	9.1	77.9	83.5	7.5	7.4
2	2065	1096	969	22.5	17.3	69.3	71.0	8.2	11.7
3	2164	1134	1030	30.6	20.8	63.6	71.8	5.8	7.4
4	2268	1134	1134	38.2	27.7	55.9	63.9	5.9	8.4
5	2129	1109	1020	44.2	34.8	49.8	58.2	6.0	7.0
6	1944	977	967	47.4	38.5	47.3	53.5	5.3	8.0
7	1862	929	933	44.2	36.3	50.5	56.4	5.3	7.0
8	2007	886	1121	45.3	39.5	49.2	53.9	5.5	6.6

This gives the average percentage of retardation as 30.9. And that is serious enough. However, this is only 52.1 per cent. of what is really *known* to exist in these schools. The balance is concealed by the allowance of that extra year in the grades for possible late entrants, when such are so few as to warrant no such allowance.

AN ACHIEVEMENT CAPACITY TEST: A PRELIMINARY REPORT.[1]

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A problem of considerable practical importance and of decided scientific interest is the evolution of a standard system of testing and examining delinquents and others for classification on the basis of their mental status.

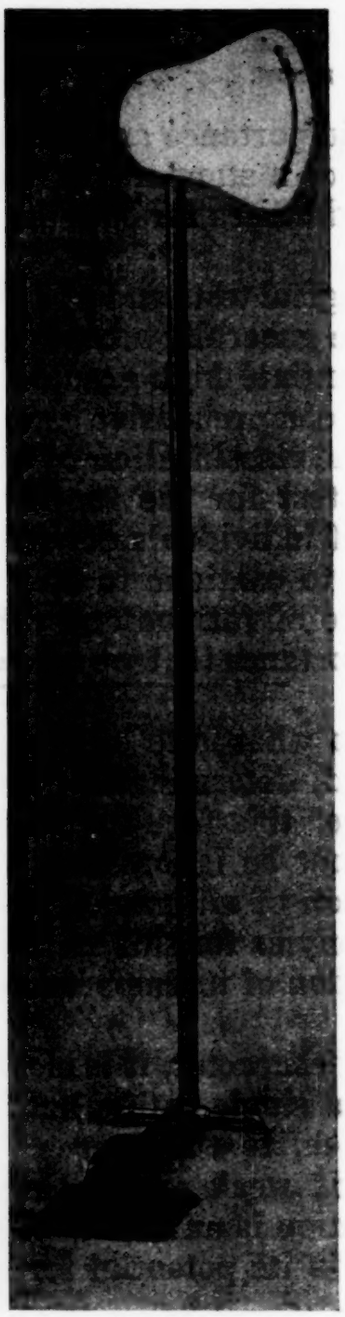
Two requisites are a group of psychological tests and a satisfactory method of scoring which shall be generally acceptable to alienists and others seeking to differentiate high-grade defectives. It is essential to include in any comprehensive group of psychological tests to be applied in the classification of defectives among prisoners an adequate test for the function called will, since the success or failure of individuals depends so largely on the ability to endure and to continue to strive for the sake of achievement and in spite of fatigue and discouragement. In short, it is of vital importance that we measure "desire for achievement."

While the principal quality included in what is to be measured is so-called will, pluck, spunk, sand, determination, endurance or persistency, in any exercise of this faculty, other mental functions are involved, and cannot be ignored, *e. g.*, courage, faith, judgment and appreciation of stimulus. The very fact that language is so rich in synonyms for this mental quality is an indication of the current notion of its importance and of its complexity as well.

In considering any test for this mental character, it is clear that the attribute to be measured is not a single entity, but a state of mind or function-complex, which, to the degree it inheres, makes for success, but which, if weak or wanting, makes for incompetence. Since this function is an expression of mental energy, it should be measured in its potential form

[1]Read before the American Psychological Association at Washington, D. C., December 27, 1911, under the title "A Kinetic Will Test."

and in terms of work done, *i. e.*, we should measure voluntary endurance of discomfort, pain or fatigue. Units or increments of pain are not easily measured. But it is practicable to measure in terms of muscle fatigue and units of time the kinetic will of subjects who stand supporting their weight with their heels off the floor, since fatigue is rapidly, naturally and harmlessly induced in this manner.



Our apparatus, as the cut shows, consists of a plate upon which the subject stands, facing an upright of a height of about 5.5 feet. Pivoted on the plate at a suitable point is a stiff wooden lever, furnished at the end of the short arm with a cross-bar on which the subject's heels rest, and connected at the other end by a thin wire to the short arm of a needle about 25 cm. long, pivoted at a point near the top of the upright, so as to oscillate in a vertical plane behind a suitable dial in which is a fenestrum 20 cm. long. This cross-bar exerts upon the heels an upward pressure of 20 gm. A weak coil-spring is introduced at a suitable point to maintain tension in the connecting parts. The proper adjustment of the lengths of lever arms enables a tenfold multiplication at the needle of the movements of the subject's heels. An electric bell is so arranged that it sounds a warning if the subject's heels sink to the floor level. The movements of the needle point up and down indicate to the subject at every moment the relative position of his heels, and spur him on in his at-

tempt to maintain his position and not allow the needle to fall below the "dead line" set for the standard.

The use of the apparatus will be still clearer from the directions given to the subjects. Since the degree of effort they might put forth depends partly on their clear understanding of the conditions of the test, and still more on the degree and form of appeal made to their pride and desire to excel, these directions are particularly important, and I reproduce them here in their entirety:

"I have tried your memory and your skill with the weights, etc., all short tests. Now, this is one of that takes considerable time if one does it well. I find that there is a great difference in the will-power of different people. Some give up easily, and some don't give up easily, but keep on with what they set out to do even if they are very tired. You've seen firemen work when they were all tired out, haven't you? And you've seen men playing football when they were about all in; but they kept on. They didn't give up easily. A man wouldn't stay on a football team long if he gave up when he was tired, would he? Now, I want to see how long you can keep going when you are tired. You want to see that, too—to see how well you can make good, even when you want to quit very badly. To try that, I have to make you very tired. I could do that by asking you to shovel sand or lift weights till you were too tired to do more, but there is a much shorter way than that. One gets tired very quickly by standing with his heels off the floor, and it doesn't harm him any either. In five minutes after stepping off the plate you'll feel comfortable again, no matter if you ache badly just before stepping off. The little black disc will show you when your heels are near the floor. If your heels touch the floor, you must stop. So be careful. To warn you I have placed these marks on the dial, and you should keep the little black disc between them. The safest way is to keep it midway between them. If, however, you accidently let it pass either of the marks, you need not stop your trial, for you have three chances to do that before you must stop on that account. So you must step off the first time your heels come down on the floor, *i. e.*, when the bell rings or the third time the little black disc passes either mark. If you should begin to

lose your balance, you may steady yourself by resting your thumb and finger on the upright for a moment, but without putting any weight on it. You are given these chances so that when you have finished the test you may feel that you did not stop because of any accident, but because you had to give up. Now take all the time you want, and if your record is a good long one, it will show how well you can make good even when tired. This test is to show me and show you, too, whether you are a quitter or a stayer."

The test has been applied to 116 Reformatory prisoners and to 12 members of the senior class in the Rindge Manual Training School of Cambridge, Mass. Physically, the two groups of subjects show rather close resemblances, though the prisoners are of a sturdier type on the whole and average nearly a year older (18.42 vs. 19.33), and 4.13 pounds heavier. Intellectually and morally, the status of the prisoners is apparently inferior.

The scores from the application of this test to these two groups show a remarkable disparity between the lowest and highest of each group, as well as a remarkable disparity between the averages, *i. e.:*

Reformatory group: lowest score, 2 minutes and 30 seconds.
Normal group: lowest score, 12 minutes.
Reformatory group: highest score, 52 minutes and 45 seconds.
Normal group: highest score, 2 hours, 30 minutes and 6 seconds.

Median and average of the groups are:

Reformatory group: 14 minutes and 54 seconds.
Normal group: 36 minutes.
Reformatory group: 17 minutes and 18 seconds.
Normal group: 52 minutes and 30 seconds, respectively.

The average score of the normal group is, then, more than twice that of the group of prisoners. Such a result clearly gives two important indications, viz., (1) that this test is an index of mental quality rather than of a degree of physical strength, and (2) that the superiority of the normal group in this mental quality of kinetic will is shown to be not only measurable, but remarkable in degree, notwithstanding the fact that the physical advantages are decidedly in the prisoners' favor. In fact, none of the other 11 psychological tests

applied to these groups by the author has shown so positively the deficiency among prisoners of those mental characters which make for success.

Discussion.

Mental persistence may not be measured in terms of physical fatigue unless there be a safe margin of unexpended muscular power after the mental persistence yields. Experience in applying the test to 128 subjects shows that in every case the decision to "give in" preceded the necessity of it. Several remarked, "Well, that's enough for me," or "I'm about all in, I guess," before they actually yielded. Some were asked if they could not have made a better record if they tried, and all of them answered in the affirmative. In no case did the heels sink to the floor while the subjects still vainly strove to maintain their elevation. So the test is valid for mental persistence to the limit of the subject's capacity.

A few subjects who did fairly well in other tests made low scores in this test, *e. g.*, 4.5 minutes instead of the Reformatory average of 17 minutes and 18 seconds. One of these subjects volunteered an excuse of lameness, but he did not limp as he left the building. Another freely admitted he could have stood longer, but said in reply to a question, "There was nothing in it for me." This brings out one of the most valuable features of the test. In a few cases of subjects who apparently did not try to secure a high score in this test, the low score is a reflection of their whimsical judgment, of inability to appreciate the significance of opportunity or of indisposition to sacrifice comfort for achievement; in any case, a measure of elements of failure. None of these cases occurred in the normal group. The spirit of appreciation and aggressiveness shown in this test, or the lack thereof, seems to be an index of the subject's capacity to meet competition, so far as any one test may be such.

The disturbing effect of varying body weight and of varying degrees of muscular strength nearly or quite neutralize each other in this form of the test, because of the closeness of relationship between the strength and development of the group

of muscles involved in carrying the weight of the body and the body-weight—a closer correspondence between power and weight than can be found in the case of any other muscle group.[2]

Previous training is not a seriously disturbing factor for groups of prisoners who have daily drills in open-air calisthenics and who work all day in shops and trade-schools and attend school in the evening, nor for manual training school students whose age, sex and daily routine are strikingly similar.

This test is one of the few which are independent of the language factor, and therefore available for universal application.

The value of this test as a measure of intellectual efficiency may be judged when one compares the broad, inclusive mental horizon of the intellectually competent with the narrower, less well-furnished one of the defective. The mental horizon of the former contains a greater number and a higher order of possible reactions to a given stimulus. It is conceivable that the stimulus that was given might arouse in the dull defective only an uncritical willingness to accede to the doctor's request, while the alert, aggressive, normally-equipped subject might react to the same stimulus by asking what the other fellows have done, or, recognizing the procedure to be a mental test, by a silent determination to show that he has as strong a will as anyone. The subject who can react well to worthy motives and act understandingly will sacrifice more for realization than the subject actuated by less worthy motives. So it seems clear that this test affords an available means of measuring those mental qualities or forces which make for success in competition.

[2]The coefficient of correlation of weight and achievement capacity for the group of 100 is + .04, which shows that though the heavier subject tends to persist a trifle longer in the test, the tendency is so small that the validity of the test does not suffer thereby.

COMMUNICATIONS AND DISCUSSIONS.

THE BINET TESTS AND MENTAL ABILITY.

Dr. Seashore's suggestion that tests of special kinds of ability be worked out as an extension of the Binet tests may imply that they do test general mental ability. If by general mental ability is meant something analogous to a test of strength or skill, I do not believe that the Binet tests or any other tests likely to be devised within the century will serve as a reliable measure.

A test of the kind of mental ability a child has is, however, possible, and it is as such a test that the Binet scale is valuable in determining mental age. The physiologist can judge with considerable accuracy the age of an individual by the texture of his bones and muscles, the proportion of parts and the kind of motions he makes much better than he can by weighing, measuring or testing strength or rate of movement. In a similar way the psychologist may hope by means of the Binet tests (improved) to determine with considerable accuracy the mental age of children and feeble-minded adults.

This determination of whether a person is normal, retarded or accelerated in his mental development is not a test of mental ability in the sense of indicating how successful he will ultimately be in any line of intellectual effort, but is only an indication that the mode of intellectual activity is of the more or less mature type. For example, mental maturity is indicated not by the number of concepts that a child has, but the character of the concepts and the kind of definitions he gives in explaining them. Attention is called to this because in giving the Binet tests and in improving and interpreting them this truth needs to be borne in mind, or we shall be led into a search after tests of general mental ability in the sense of degree of power.

E. A. KIRKPATRICK.

Fitchburg, Mass.

ABSTRACTS AND REVIEWS.

ROBERT M. YERKES. *Introduction to Psychology.* New York: Henry Holt & Co., 1911. Pp. xii, 427.

This book differs in important respects from the ordinary introduction to psychology. In the initial chapter, which, as the author dryly remarks, "contains prefactory material, but is not called a preface, because it is intended to be read," two kinds of textbooks are distinguished—the outline and the manual. The outline aims to give a bird's-eye view of the subject; the manual sets forth the facts in detail. The outline permits a more vivid, personal, tentative presentation, while the manual must be more formal, general and impersonal. The author holds steadfastly to this conception of the outline throughout the book, and thus gains a freedom of treatment and a vigor of emphasis which give a distinct zest to the discussion, though they may often provoke dissent.

The work is divided into six parts. Part I is introductory, and deals with the aims, problems, methods, values and ideals of psychology. Not only is introspection emphasized as the fundamental method of psychological study, but here at the outset, as again and again throughout the book, the pupil is led to feel by indirect suggestion that skill in introspection is the one thing supremely to be desired; that its acquisition depends on one's own efforts; and that if one fails to acquire it one has missed something very much worth while in life. Part II treats of the description of consciousness, and shows that the psychologist's task is to analyze mental life into its simplest thinkable parts or elements, to discover the characteristics of these elements, and to show the relations that subsist between them. But with analysis and description the psychologist's work is not finished. Following Wundt, the author demands that the isolated elements be recombined into concrete thought wholes, and, making extensive use of an analogy from chemistry, he insists that synthesis is just as important a part of the psychologist's duty as analysis. It is true that this is presented rather as an ideal for the future than as a claim for the present status of the science, and the reviewer

believes that it might even be disputed whether a synthesis of elements is strictly possible in any science; whether all science is not exclusively analytic. However this may be, the author has performed a service in raising the question and setting forth the arguments in favor of synthesis.

Part III contains two brief chapters on the development of consciousness in the individual and in the race. The diagram representing the psycho-phylogenetic tree gives the pupil an excellent conception of the relations of the animal phyla from the point of view of their mental development. In Part IV a number of the important generalizations of psychology are presented in the form of brief, dogmatic statements, which are called laws. It is carefully pointed out at the beginning of the discussion that the generalizations of science are incomplete, and that further investigation may show that many of these laws need re-statement. Those who have had much experience in teaching psychology to beginners will probably agree that there is a distinct advantage in having some such list of definite formal statements to aid pupils in organizing the mass of details with which they frequently find themselves overwhelmed.

The title of Part V is Psychology as Explanation and Correlation, and it is here that the author develops his fundamental phychological creed. Emphasizing the orderly succession in mental life, he not only rejects interaction between mind and body, but claims for consciousness a psychic causality which is every whit as valid as the relation of cause and effect between physical phenomena. A complete description of consciousness would reveal the causal connections between our thoughts, and the primary duty of the psychologist is to explain each mental fact in terms of its psychic antecedents, or causes. Any attempt at explanation by reference of mental phenomena to physical changes or neural activities does not explain at all, but only serves to becloud the issue and confuse the student. Hence all reference to the nervous system is purposely omitted. The question of the relation between mental and physical facts is an interesting and important one, but should be left to the psycho-physicist, and especially should not be brought in to mislead the beginner. It is somewhat surprising to find one who has made such extensive contributions to comparative behavior taking the extreme stand that psychology is limited to pure introspection, and ruling out all study or interpretation of behavior. Moreover, in Part VI it is admitted that we can control the trend of

our thoughts only by controlling the environmental influences that act upon us as organisms, and the concluding chapters of the book, on education and eugenics, discuss the conditions of such control. Further, the orderly sequence of mental facts, upon which the claim for psychic causality is based, seems to depend upon the exact reinstatement of physical conditions. Thus the author himself finds it impossible to hold strictly to a purely psychic explanation.

Probably the chief function of an introductory textbook is to induce the pupils to think. This the present book will certainly accomplish. The style is terse and vigorous, the sentences short and easily grasped, and the class exercises that follow each chapter are admirably chosen to stimulate introspection. J. C. B.

ERNEST JONES, M.D. *The Psychopathology of Every-day Life.* American Journal of Psychology, 22: October, 1911. Pp. 477-527.

This article presents material similar to that cited in Freud's study of like title. In our every-day life we frequently note what might be termed imperfections in our mental functioning. We fail to do just what we intend to do, or we do other things which we do not intend to do. These inadequate or seemingly purposeless acts usually go unexplained, or are merely attributed to chance and accident. The author argues that there is no chance and accident in mental operations. On the contrary, determinism prevails in even the most trivial bit of mental functioning. Psycho-analysis shows that the performances in question have been determined by motives or factors of which we were not aware during their occurrence. The mechanism underlying them, therefore, is similar to that which underlies, according to Freud, the more serious disturbances of mental life, like hysteria and allied neuroses, which are truly pathological.

The deficiencies described in the present article are such as slips of the tongue, slips of the pen, symptomatic acts, certain failures to perceive or to remember, as well as false perceptions and false recollections. An unconsciously operative repressed wish or motive is assumed to condition these deficiencies, whether directly or indirectly. The appreciation of these every-day errors is important, both practically and theoretically, for the understanding of the way in which decisions and judgments are formed and for the evidence it affords of thoroughgoing psychical determinism.

Cornell University. HENRY MAYER.

MICHIGAN STATE NORMAL COLLEGE
TRAINING SCHOOL DEPARTMENT.

H. H. SCHROEDER. *The Psychology of Conduct.* Chicago: Row, Peterson & Co., 1911. Pp. 287.

An unusually well-written and well-informed book, intended primarily for young teachers and eminently well adapted to reading-circle purposes. The writer does not approach his problem from the point of view of the positive sciences, nor has he much sympathy with the experimental study of education. "Highly valuable as such experimental efforts are, it is best to leave them to the specialists who are qualified to pursue them and profit by them, and for the rest of us to act upon such educational theory as has stood the test of time." The citations are consequently limited almost exclusively to the classical writers in the fields of philosophy and theology. Conduct "regard:" regard for self, regard for others, regard for knowledge is determined by motives which can be reduced to certain types of and truth, regard for the beautiful, regard for right and duty, and religious regard. The educational implications of each of these types are treated in separate chapters. The writer is teacher of psychology and pedagogy in the Whitewater (Wisconsin) State Normal School.

W. C. B.

EDWARD A. FITZPATRICK. *The Educational Views and Influence of De Witt Clinton.* New York: Teachers College, Columbia University, 1911. Pp. xii, 157.

The author reaches the conclusion that Clinton is, of those whose work is finished, "perhaps the greatest theorist whose name will be recorded in the future adequate history of American education, with the exception of Dr. William T. Harris." Among the bases for this conclusion are the following facts: Clinton's pioneer work in the development of free, public schools in New York City; his initiation and support of the movement for the effective professional preparation of teachers; his advocacy of the education of women; his recognition of the need for special education of defectives; the construction of a system of juvenile reformation, and his advocacy of an enriched curriculum which would include instruction in mechanics, chemistry, agriculture and other subjects. Dr. Fitzpatrick's dissertation is an illustration of the thorough-going monographic work which is so sadly needed in the history of education. W. C. B.

THE
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EDITORIALS.

ADJUSTMENT BETWEEN COLLEGE AND HIGH SCHOOL.

In the sixth annual report of the Carnegie Foundation for the Advancement of Teaching President Pritchett comments favorably upon the progress recently made in securing a better adjustment between the college and the high school. On the one hand, in the decade 1900-1910 one hundred and seventy-two colleges and universities in thirteen representative states raised their entrance requirements to or toward a four-years' high school course. Such action lends dignity to the high schools and increases the importance of their work. The ambitious student who desires to go to college finds that even the smaller institutions expect him to have completed four years of good work in the high school. An incentive is thus offered to the high school to plan and carry into execution some genuinely constructive work in the education of those who later will presumably occupy influential positions in their communities.

On the other hand, there has been a growing disposition in the last few years on the part of the larger and older institutions to give up their rigid systems of examination, which have heretofore worked to the advantage of the tutors and the special preparatory schools, and to meet the high school graduate on the ground of his own preparation, requiring merely that this preparation shall have included a certain number of units of work in which the candidate shall be able to show some proficiency. President Pritchett takes Harvard as an example.

"Graduation from a good general four-year high school in any state admits directly to Harvard College, provided the applicant can demonstrate in a reasonable test that he has really done the work which his high school course covers. It is in the preparation of these examinations that the chief difficulty will arise. * * * American teachers have so long accustomed themselves to the hard-and-fast form of examination in a limited field that it may require some experience before the Harvard teachers will produce examination papers fitted to test the qualities of the boy's mind and the character of his scholarship rather than the excellence of his drill in specific studies." Of the 115 candidates who took these new examinations in June, 1911, 72 were admitted and 43 rejected. "The large number of rejections showed the wide variations in standards of scholardship is different schools. Boys whose school records were very high sometimes made a very poor showing in the examinations. It will require, among other things, a stiff academic backbone on the part of those who administer these admission examinations, if the plan is to succeed; but Harvard can do no better service to education than to send back fearlessly to the high schools those applicants for admission to college who present good credentials is English, and yet cannot write the language correctly; who have high marks in mathematics, and yet cannot solve a simple problem in algebra; who present flattering papers in history, and yet know nothing of the forces of civilization which make history. No other thing that an American college could do at this moment compares in importance with this task well done. Harvard has now made it possible for any boy in any town or village in the Union, where a fair high school exists, to fit himself for entrance to college. Harvard College thus articulates squarely with the secondary school system of every state in the Union. The adoption of this policy is an act of true educational statesmanship. It is of immense importance to education that the university carry out the plan courageously and wisely."

It is true that the preparation for college is only one aspect of the high school's task. It must also take account of the large number of pupils who will never go to college. But such an adjustment with the college will increase the respect in which the high school is held by the community, will result in a saner and more comprehensive grasp of the subjects that are taught in the high school,

[illegible] STATE NORMAL COLLEGE
[illegible] MIND SCHOOL DEPARTMENT

will serve to lessen the gap between preparation for college and preparation for life, and will cause greater emphasis to be laid on what should be the aim of all high school work—the intellectual development of the pupil. J. C. B.

THE ETHICS OF PATENTED EDUCATION.

We are evidently destined to be invaded by the "House of Childhood" movement. It is rumored that a chain of training schools is contemplated which shall enable teachers in any region of the country to receive instruction in the Montessori system. Meanwhile, the materials that are used in the system are placed on sale by an incorporated agency in New York City. From the circular distributed by this concern we learn that "the Montessori Didactic Apparatus has been patented, and other patent applications are pending: *Infringers and imitators will be vigorously prosecuted.*" The italics are not ours, but those of the "House of Childhood."

Now, to a mere pedagogue, unversed in the intricacies of patent law, it is a little difficult to understand what exactly can be patented in this new (?) system. The materials comprise such familiar devices as colored worsteds, cubes of varying sizes, "geometrical insets" (which are variations in the well-known form-board), sandpaper letters (which are rather clumsy substitutes for the raised letters used in institutions for the blind in teaching the form of written letters), boards smoothed and covered with sandpaper, and several similar devices which are, again, as common-place in our schools for training defective children as spelling-books in a primary school. Can ideas long in common use be patented and users of them prosecuted? Can materials familiar in any school be given a slight modification in detail and then patented? Is there anything really new in this Montessori system?

These queries we shall not attempt to answer, but one thing is clear enough. This commercialization of the "system" removes it entirely, in spirit at least, from the realm of scientific contribution to educational progress. If Montessori has discovered a new and far-reaching principle which will reconstruct the whole theory of child training and which will directly benefit the children in every land, then let the discovery be disseminated freely to all who will employ it. To patent a scientific contribution of that kind would

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be on a par with patenting the discovery of ether or of antiseptic surgery. In our humble opinion it is time to develop a new and higher standard of ethics in the teaching profession. G. M. W.

THROUGH CONSCIOUSNESS TO AUTOMATISM.

The relative place of consciousness and freedom as opposed to automatism in our educational aims may be illustrated by the familiar act of the boy tipping his hat to ladies. Consciousness and freedom are temporary affairs which come in only at points of new adjustment; the goal is automatism. When the boy is to learn to tip his hat, we want him free to warm up over the fact that the tipping of the hat is a sign of good breeding; that it is an honor to himself and parents, and to the person greeted; that it gives a delightful feeling of satisfaction in power and self mastery; that it goes well with a smile and a compliment; that it brings returns; that it is a means of relieving pent up energies by knowing how to dispose of the hands; that he can thereby actually express individually his appreciation of the person greeted; that tipping the hat is not that trifling physical act only but, when properly done, is the entering of one mind into relation with another; that this little act of manners is laying the foundation for the man; that if he does this with all his heart he will acquire the power to do greater things with the same ease. This implies ability to hesitate and size up the situation in his own mind; it means willingness to cope with instinctive cravings; it means willingness to fight single-handed for personal adjustment. And all this tends to throw him into an attitude of profoundest consciousness of this act for the time being. At this beginning of a new adjustment, we want him free to think, feel and act with the profoundest consciousness. But as soon as he learns to tip his hat we want that process to take care of itself, to be automatic, so that he performs the act on every appropriate occasion without hesitation and without thinking, but with the fullest richness of significance. Only in this way will his consciousness be free for new operations, for the making of new adjustments, while the adjustments once made through the most strenuous consciousness are now self acting. C. E. S.

NOTES AND NEWS.

The Committee of the American Psychological Association on Class and Home Experiments has printed in preliminary form directions (both for teachers and students) for conducting a class experiment in habit-forming. Teachers who are members of the Association and who will report the results of the experiment, may obtain sets for trial by writing to Professor G. M. Whipple, Cornell University, Ithaca, N. Y., before August 1st. Request for the forms should indicate the number of students in the class.

Among the lectures recently delivered before the *School of Psychology,* 49 Rue Saint-André-des-Arts, Paris, were the following: "Diseases of Instinct," Dr. Berillon; "The Psychology of the Buyer," Dr. Moride; "The Education of the Eye: Visual Memory and Visual Imagination," Lucie Berillon; "Hypnotism and Mental Orthopedics," Dr. Berillon; "The Intelligence of Animals," Dr. Moret; and "The Psychotherapeutic Treatment of Diseases of the Will," Dr. Joire.

On November 4, 1912, there will be opened in Brussels an International School of Paidology, in affiliation with the *École Supérieure des Sciences Pédologiques et Psychologiques.* The school is the outcome of a movement started at the First International Congress of Paidology, which met at Brussels in August, 1911, for the establishment of a graduate institution which should offer advanced training commensurate with the development and specialization of our knowledge about the child. It will be an institution for research as well as for instruction, and the three-year course will lead to the degree of Doctor of Paidological Science. Courses will be offered by distinguished Belgian and foreign specialists in theoretical and practical paidology, experimental psychology, anthropometry, school hygiene, history of education, "puericulture," experimental pedagogy and didactics, physical education, infantile sociology, abnormal childhood, and other subjects. The school will have at its disposal four laboratories: One for paidology, one for experimental psychology, one for physiology and anthropometry, and one for biological chemistry. The undertaking is noteworthy for its attempt to bring together under one faculty the various scattered lines of child investigation. Further details may be secured on application to the director, Dr. I. Ioteyko, 35 Avenue Paul de Jaer, Brussels.

The bill creating a United States Children's Bureau, in connection with the Department of Commerce and Labor, has been passed by Congress and approved by President Taft.

The Mississippi legislature has passed a bill appropriating $126,000 for a new state normal school.—*Western Journal of Education.*

Among the courses announced for the coming year by the School of Education of the University of Kansas we note with special interest a course in educational pathology with visits to institutions for defective children, a course in vocational education, one in social education, one in experimental education, one in the mental measurement of school children, and one in school hygiene. To increase the influence of the School of Education throughout the State several Departments of School Relations have been organized, among which are high school relations, relations of elementary to secondary education, and school hygiene, including mental and physical tests, and medical inspection.

Allegheny College has increased its endowment by $500,000. A part of this will be used in building up a department of education. One new chair will be created, the T. D. Collins professorship of philosophy and education, and several instructorships and assistant professorships are planned.

The New York City board of education has voted to grant a limited number of experienced elementary school teachers leave of absence for three months in order that they may fit themselves to take charge of the special classes organized for defective children, and has authorized the establishment of a course in the Brooklyn Training School for Teachers for the training of teachers for such special classes. This is believed to be the first instance of a city definitely training its teachers for this kind of work.

The Mechanics Institute, of Rochester, N. Y., offers an attractive list of courses in the manual arts during the summer session, June 24 to August 16. The Institute is especially well equipped for shop work, the applied arts, as jewelry, leather work, metal work, pottery, weaving, etc., and the domestic arts, as dressmaking, millinery, sewing and cooking.

The executive committee of the National Education Association has decided that the next meeting of the Association will be held in Chicago, July 6-12, 1912.

Among the resolutions adopted by the Kansas State Teachers' Association at their last annual meeting was one calling for specific instruction in the high school in such subjects as hygiene, sanitation, and the prevention of disease. Another resolution advocated the appointment of a State inspector for rural schools. The need for definite instruction in sex hygiene was recognized, and it was urged that this duty be accepted as one of the responsibilities of the teacher and school administrator. In view of the increasing attendance of teachers in summer schools in the month of July, the directors of

the National Education Association are urged to change the date of their meeting to August.

It is stated in the daily press that the school board of Philadelphia has abolished all fraternities in the public schools, and has assumed complete supervision over the sports participated in by students.

At the last meeting of the New York Branch of the American Psychological Association, April 22, the following papers were presented: "Sex Differences in Incidental Memory," Mr. G. C. Myers; "Studies in Recognition Memory," Dr. E. K. Strong; "Individual Differences in the Interests of Children," Miss Gertrude M. Kuper; "Experiments with the Hampton Court Maze," Prof. H. A. Ruger; "Relation of Interference to Adaptability," Mr. A. J. Culler; "The Optimal Distribution of Time and the Relation of Length of Material to Time Taken for Learning," Mr. D. O. Lyon; "The Age of Walking and Talking in Relation to General Intelligence," Mr. C. D. Mead; and "Practice in the Case of Children of School Age," Mr. T. H. Kirby.

The Minnesota Psychological Conference held its fourth annual meeting at the University of Minnesota, March 29. The topic for the morning session was the Treatment and Diagnosis of Exceptional Children. Dr. F. Kuhlmann discussed the Binet Scale, Miss Eunice Peabody reported on the Recent Literature on the Binet Tests, Mrs. Marie C. Nehls spoke on the Binet Tests and Juvenile Court Work, Supt. F. E. Lurton discussed his Study in Retardation, which appears on another page of this issue, and Mr. Hans W. Schmidt considered the Exceptional Child and Special Schools. Among other papers at the afternoon session was one by Mr. L. W. Kline reporting the results of an investigation on the Psychology of Spelling, the detailed account of which will appear in the September number of this JOURNAL.

A conference was recently held at New Haven between the examiners of the academic department of Yale University and a body of eighteen educators appointed by the State Association of Classical and High School Teachers, and representing the high and private schools of Connecticut. The conference made a careful review and criticism of recent entrance examination papers, and the result will probably be the modification of future papers in many particulars, and perhaps the joint preparation of such papers by teachers and examiners.

Under the auspices of the University of Pittsburgh a conference was held on April 16 to consider the problem of The Backward and Defective Child. Dr. Edward E. Mayer introduced the subject, Professor J. E. Wallace Wallin discussed The Psychological Clinic,

Superintendent S. L. Heeter spoke on The Abnormal Child in the Public Schools, Dr. J. Leonard Levy presented the advantages of The Farm for Backward Children, and Dr. E. Bosworth McCready described the Hospital School for Backward Children.

On April 24 there was presented at the College of the City of New York a symposium on the subject "The Training of the High School Teacher." Addresses were made by Associate Superintendent Edward L. Stevens, "What the Board of Superintendents Wants"; Dr. Walter L. Hervey, "The Viewpoint of the Board of Examiners"; Principal John H. Denbigh, "The Viewpoint of a High School Principal"; Professor Frank W. Ballou, of the Commission on School Inquiry, "The Viewpoint of an Investigator"; and Dr. John Franklin Brown, "What Germany Can Teach Us."

The fifth annual Congress of the *Deutsche Gesellschaft für experimentelle Psychologie* was held in Berlin, April 16-20. The meeting was attended by eminent experimentalists from all the leading countries of the world, and gave a good indication of current psychological activities. Through the kindness of Dr. Wilhelm Peters, of the University of Würzburg, we hope to be able in an early number to give our readers a more detailed account of those discussions of the Congress which have a bearing upon education.

The second International Congress for Moral Education will be held at The Hague, August 22-27, 1912. A very attractive program has been prepared, including speakers from not only the principal European countries, but also from Turkey, India and the Far East.

Professor G. M. Whipple, who has been granted a half-year's leave of absence from Cornell University, will sail for Europe with his family directly after the summer session and devote five months to visiting educational institutions in France, Belgium, Germany and Switzerland. Professor Whipple will spend the greater portion of his time in Germany at various university centers, particularly Hamburg, Leipzig, Berlin and Breslau, getting in touch with recent developments in applied and educational psychology.

Dr. J. E. Wallace Wallin, recently appointed director of the psychological clinic at the University of Pittsburgh, is arousing a great deal of local interest in the study of backward children. The *Pittsburgh Sun* devotes considerable space to a discussion of the aims of the clinic and the various ways in which it can be made of greatest use to the community, emphasizing the mental examination and diagnosis of exceptional children, the training of teachers and social workers in the best methods of dealing with abnormal children, and the opportunities for research with mental defectives.

Professor W. C. Bagley, Director of the School of Education of the University of Illinois, delivered a number of lectures on educational topics at Wheeling, W. Va., and Zanesville, O., in the last week of April. On May 11 Professor Bagley addressed the assembly of Cook County teachers in Chicago.

On May 1 Dr. Anna J. McKeag, formerly head of the department of education in Wellesley College, was formally inaugurated president of Wilson College, Chambersburg, Pa. Among those participating in the ceremonies were Provost Edgar F. Smith, University of Pennsylvania, President Ellen F. Pendleton, Wellesley College, and Chancellor Elmer Ellsworth Brown, New York University.

Professor W. C. Ruediger, of the George Washington University, will give ten lectures before the students of the summer session of the St. Louis Teachers College during the week of June 17. Among the topics that he will discuss are Realness in Teaching, Education and Avocation, and The Improvement of Teachers in Service.

"The Psychology of Child Development," by Professor Irving King, of the University of Iowa, has been translated into Japanese.

During the summer quarter the departments of psychology and education of the University of Chicago will have the assistance of the following instructors from other institutions: Henry C. Morrison, State Superintendent of Public Instruction, New Hampshire; Dr. Frank Pierrepont Graves, professor of the history of education, Ohio State University; Dr. Arthur H. Sutherland, instructor in psychology, University of Illinois; and Dr. Evander Bradley McGilvary, University of Wisconsin.

Dean C. H. Johnston, of the University of Kansas, gave three lectures on "Problems of Secondary Education" before the School of Education, University of Illinois, April 29th and 30th.

President Charles Oliver Merica, of Wyoming State University, has been recently elected superintendent of the State Training School for Boys in Red Wing, Minnesota.

Charles McKenny, for the past twelve years president of the Milwaukee, Wisconsin, State Normal School, formerly at the head of the State Normal School at Mt. Pleasant, Michigan, has been elected president of the Michigan State Normal College to succeed President L. H. Jones, who retires at the close of the present year.

J. E. McGilvrey, who has been acting president of the Macomb, Illinois, State Normal School since the death of President Bayliss last year, will become president of the Kent, Ohio, State Normal School on July 1.

Superintendent H. B. Williams, of Sandusky, Ohio, has been elected president of the new State Normal School to be established at Bowling Green, Ohio. President Williams will enter upon his work in 1913.

Dr. J. Carleton Bell, director of the psychological laboratory in the Brooklyn Training School for Teachers, has been appointed professor of the art of teaching in the University of Texas. Dr. Bell expects to devote his attention largely to the experimental investigation of problems of teaching.

Professor Frederick E. Bolton, professor of education and director of the school of education in the State University of Iowa, has accepted a call to become head of the department of education in the State University of Washington at Seattle, and will begin his work at that place in September.—*Science.*

Dr. John E. Clark, instructor in history and philosophy, Boston University, has been promoted to a professorship in education and public school administration in that institution.

Mr. William A. Cook, of the University of Illinois, has been appointed graduate fellow in education in the University of Wisconsin for next year.

Dr. Ira W. Howerth, Dean of University College, University of Chicago, has been appointed professor of education and director of university extension in the University of California.

Mr. Linus W. Kline, of the Duluth, Minnesota, Normal School, has been appointed research fellow in psychology in Harvard University for next year.

Dr. Amos W. Peters, of the Carnegie Food Laboratory in Boston, has been appointed biochemist in the research department of the Training School for Feeble-minded Children, at Vineland, N. J. So far as is known this is the first appointment of the kind ever made. Dr. Peters will carry on studies in metabolism and brain chemistry.—*Science.*

Dr. William S. Skarstrom, assistant professor of physical education at Columbia University, has been appointed professor of the theory and practice of physical education at Wellesley College. Dr. Skarstrom will take charge of the "normal courses" in the Wellesley department of hygiene and physical education, formerly the Boston Normal School of Gymnastics.

CURRENT PERIODICALS.

(In this section only such articles will be noticed as bear directly or indirectly upon the interests of this journal.)

THE CHILD (London). Vol. II, No. 4, January, 1912. JOHN LAMBERT, M. D. *Preparations for the Prevention of Dust in Schools.* 279-289. Dust menaces health by direct pathogenic infection and by mechanical irritation, the latter being more serious in the schoolroom. All schoolrooms should be provided with foot scrapers, wire and fiber mats at the entrance; the floors should be swept daily and scrubbed at least once a month. Of the newer methods of reducing dust, floor polishes, sawdust substitutes, vacuum cleaners, and oil preparations, the last named is most efficient. Experimental evidence is given (exposure of gelatine and agar plates) to demonstrate that dustless oils retain dust particles that fall upon them and greatly reduce the amount of floating dust during sweeping. MISS A. H. P. KIRBY. *The Problem of the Feeble-Minded Child.* 290-8. Description, with illustrations, of the work of the "Princess Christian's Farm Colony" in Kent, and history of the development of other Farm Colonies. The English authorities have provided for about 10,000 children in special schools and classes, but about 35,000 remain to be provided for. Realizing that education will never effect permanent betterment, the National Association for the Feeble-Minded strives to follow up the work of the educational classes by a system of After-Care Centers. "To protect the feeble-minded from the results of their own defects, and to protect society from their deficiencies, must mark the limits of our ambition." ISADOR H. CORIAT, M. D. *Psycho-Analysis and the Sexual Hygiene of Children.* 299-304. A simple account of Freudian principles—infantile sexuality, infantile amnesia, repression, the growth of psycho-neuroses, the psycho-analytic method. Urges rational early sex instruction with wise efforts at sublimation. G. NORMAN MEACHEN, M. D. *The Prevention and Cure of Chilblains in Children.* 305-8. Underlying factor is poor circulation. Secondary factor, the action of cold upon an exposed part. To prevent, increase the fat constituents of the diet to supply more bodily heat, avoid washing hands or feet in cold water, take exercises to quicken the circulation, wear woolen gloves and stockings and heavy shoes. Formulas are appended for local treatment by drugs. JOHN PRIESTLEY. *Medical Inspection in Schools: The Next Step.* 309-313. Argues that most school ailments are chronic, that incipient maladies are rarely found by the school inspector, hence oft-repeated inspections of all children are futile. An ideal system would include (1) a rough examination on first admission, (2) a thorough examination at 8

years of age, (3) a final examination when leaving school, and (4) visitation of the school once in three months. A. S. COBBLEDICK, M. D. *Refractive Errors in the Eyesight of Children.* 341-4. Brief statement of frequency, symptoms and treatment. Gives some account of arguments for and against "school myopia," and admits that the cause of myopia "is still somewhat obscure." Vol. II, No. 5, February, 1912. DOUGLAS C. MCMURTRIE. *The Care of Crippled Children in America.* 378-385. A general sketch, dealing with the requirements of crippled children, their care in residential and in non-residential institutions. Thinks provision is as yet only sporadic, while the institutions have not profited by interchange of experience. ISABEL D. MARRIS. *The Making of a Hooligan.* 386-391. Lack of "discipline," in the wide sense of that term is the main factor in developing the wayward individual, who may be "spoiled" in a rich as well as in a poor home. Legislation will not remedy this social evil unless we can create proper public opinion and moral atmosphere. J. COURTENAY LORD. *Children's Courts.* 392-5. The author established the children's court in England, 1905. Describes work and results of the court at Birmingham. Concludes children's courts, "if thoughtfully and sympathetically managed, form the groundwork upon which a great social improvement can be built up." JOHN H. YEARSLEY. *Injuries to the Eye in Childhood.* 396-8. Elementary advice for prevention of eye injuries to children, treatment of foreign bodies in eye, burns, and sympathetic ophthalmia. ROBERT J. EWART, M. D. *Mankind in the Making.* 399-404. Attempts by statistical inquiry to find at what ages, at what intervals and at what seasons a mother should bear children to secure their optimal physical and mental development. Concludes that there is a "reproductive plateau" (21 to 40 years) best suited to child-bearing, that "spacing" should average three years, number of children should be limited to five, and pregnancy should begin in May. Children born under other conditions than these are liable to physical and mental handicap. EMILIA V. KANTHACK DE VOSS. *Child Welfare and Public Instruction in Germany.* 405-9. German social authorities are conducting a vigorous campaign for the improvement of public health. The Central Association for Public Welfare in the Province of Hanover, with the co-operation of Invalidity Insurance institutions, circulates a pictorial leaflet, which is reproduced, to teach mothers the advantages of breast feeding. HUGH T. ASHBY. *Headaches in Children.* 426-8. Headaches are rare before the age of four or five, are commoner in nervous and neurotic children, or quickly growing children, are often the consequence of eye strain, adenoids and poor ventilation. JAMES E. WEST. *The Boy Scout Movement in America.* 429-432. Brief account of history, aims and organization. "There is every reason to believe that the Scout movement will grow and that it will become a permanent institution in America." Vol. II, No. 6, March, 1912.

ALICE M. BURN. *The Clothing of Children in Relation to Physique and Development.* 462-7. Claims that "70 per cent. of the girls, and a considerable percentage of the boys, in our elementary schools are physically victimized to their clothes." Most of the minor school defects of breathing and posture would be materially diminished by rational clothing, suggestions for which conclude the article. DAVID MCKAIL, M. D. *Eyestrain in School Children.* 468-472. Discusses nature and causes of eye-strain, assigning a prominent place to unhygienic school work. For prevention urges abolition of all book instruction prior to 8 or 9 years. EDITH H. HEWETT. *The Teaching of Deaf Children.* 473-9. The deaf child is really more handicapped than the blind child so far as instruction is concerned. He must be taught the meaning and use of *every* word. His teacher must take special pains with the "subjective" language, the colloquial expressions and the idiomatic phrases of every-day life. It is particularly important to begin instruction in lip reading and articulation at an early age, especially to utilize the years between 2 and 7. L. D. CRUICKSHANK, M. D. *Child Welfare Work in Dunfermline.* 485. Andrew Carnegie, eight years ago, gave to his native town an estate and an endowment yielding $150,000 a year to bring "more of sweetness and light" into the lives of the townspeople. The Carnegie Dunfermline Trust is an institution which now unites his various benefactions, including a magnificent building, gymnasium, baths, library, etc. There has recently been incorporated a Physical Training College, a thorough system of medical inspection and school clinics for eye and teeth treatment, while the Civic Guild acts as a "follow-up" agency. Other activities concern musical culture, school gardening, and arts and crafts training. The institution bids fair to become the most important agency in Scotland for the training of physical training experts and medical inspectors. HALDIN DAVIS. *Ringworm.* 511-514. Some practical aspects of the treatment of ringworm, with special reference to the therapeutic value of the X-ray.

PUBLICATIONS RECEIVED TO MAY 1, 1912.

(Notice in this section does not preclude a more extended review.)

AMY B. BARNARD, L. L. A. *Talks With Children About Themselves.* New York: Cassell & Co., Ltd., 1911. Pp. vii, 228. $1.25 net.

This is an attempt to instruct children in anatomy, physiology and hygiene by serving up scientific facts in an anecdotal vein. The eye is the "human camera," the nervous system is "a strange telegraphic system," the brain is "the mind's precious storehouse," etc. One would not quarrel with this plan nor with the anthropomorphism which it almost inevitably entails were the details scientifically accurate. But it is questionable to say, for example, that the picture which is upside down on the retina is made right-side up in the brain, or that sounds "play" on the organ of Corti, while the account of cortical localization is nothing short of amusing—"The intellect is in the front part, the social and domestic feelings are in the back part, the selfish propensities at the sides, and the moral and religious sentiments in the upper part." "Notice what a beautiful arrangement this is," continues the author, "the intellect in the forehead above the eyes." Yes, very beautiful!

C. H. BEAN. *The Curve of Forgetting.* Archives of Psychology, No. 21, March, 1912. Pp. 45. Paper 45c.

The author studied the curve of forgetting in three types of activity: 1. Accuracy in throwing at a mark; 2. Recognition of a series of nine consonants; 3. Typewriting. In general the curve of forgetting resembles that of learning, but the absolute rate depends on the degree to which the material has been learned, the distribution or concentration of the process of learning, the nature of the material, and the method of measuring the forgetting. It is probable that young children forget more rapidly than adults.

FRANK G. BRUNER. *Bad Air and Stupidity.* Reprinted from the Educational Bi-Monthly, February, 1912. Pp. 16.

An interesting discussion of the constitution of bad air, but there is little or nothing to show its connection with stupidity.

FRANK G. BRUNER. *The Influence of Open-Air and Low Temperature Schoolrooms on the Alertness and Scholarship of Pupils.* Reprinted from Proceedings of the N. E. A., 1911. Pp. 890-898.

A description of Chicago's experiment with open-air schools.

Whether the undoubted improvement of the pupils was due solely to the open air and low temperature, or whether a good part of it might not be attributed to more freedom, lack of restraint and wholesome food, are questions which unfortunately cannot be answered from the available data.

WILLIAM E. CASTLE. *Heredity in Relation to Evolution and Animal Breeding.* New York: D. Appleton & Co., 1911. Pp. xii, 184.

A discussion of the problem of "creating" new and improved breeds of plants and animals, dealing chiefly with the operation and implications of Mendel's law. The book is clearly written and well illustrated. To each chapter is appended a list of selected references to the monographic literature.

CHARLES BENEDICT DAVENPORT. *Heredity in Relation to Eugenics.* New York: Henry Holt & Co., 1911. Pp. xi, 298. $2.00 net.

A book of great merit that should be in the hands of every educator. Deals with the nature, importance, aims and method of eugenics, the inheritance of family traits, the geographic distribution of inheritable traits, the eugenic significance of migrations and especially American immigration, American families, the relation of eugenics and euthenics, and allied topics. Is supplied with 175 illustrations and diagrams, a serviceable index and a complete bibliography. Particularly worth while for showing the status of the problem of dealing with feeble-mindedness.

YVES DELAGE AND MARIE GOLDSMITH. *The Theories of Evolution.* Translated by André Tridon. New York: B. W. Huebsch, 1912. Pp. 352. $2.00 net.

An attempt to bring within a small compass an account and an evaluation of the leading theories of evolution. Successive chapters discuss the idea of evolution before Darwin; Darwin and the *Origin of Species;* Natural Selection with Darwin and his successors; sexual selection; the theories of heredity proposed by Spencer, Darwin, Naegeli, De Vries, Weissmann, William Roux and his disciples, Galton and Mendel; the transmission of acquired characteristics; the theories of Lamarck, Cope and Le Dantec; organic selection; isolation; orthogenesis, and mutation. In an interesting summary, the authors conclude that no one theory offers a satisfactory solution of the problem of evolution, and that the chief problem at present is to determine how the several factors co-operate. The most important problem in this connection has to do with the mechanism of character transmission. Until that has been determined, the authors assert, we are not justified in rejecting the transmission of modifications. Unfortunately the book lacks an index.

W. L. H. DUCKWORTH. *Prehistoric Man.* Cambridge University Manuals of Science and Literature. New York: G. P. Putnam's Sons, 1912. Pp. 156. 40 cents.

In this, the most recent addition to the excellent series of Cambridge Manuals, the evidence of prehistoric man is clearly and succinctly set forth. Perhaps the most interesting part of the book is the concluding chapter, which presents a sketch of human evolution in the light of recent discoveries. The past ten years have been particularly fruitful in such discoveries, and while as yet the details of man's rise from simian ancestry are far from complete, the rough outline is beginning to take fairly definite shape.

Enzyklopädisches Handbuch des Kinderschutzes und der Jugendfürsorge, edited with the co-operation of prominent experts by DRS. TH. HELLER, FR. SCHILLER and M. TAUBE. (Two vols. I; *Abhärtung-Kunsterziehung:* II; *Landerziehungsheime-Zwangsvorstellungen.*) Leipzig: Verlag von Wilhelm Engelmann, 1911. Pp. viii, 371 and 416. Mk. 34.

To be reviewed.

SHEPHERD IVORY FRANZ. *Handbook of Mental Examination Methods.* The Nervous and Mental Disease Monograph Series, No. 10. New York: The Journal of Nervous and Mental Disease Publishing Company, 1912. Pp. 165.

This manual fills a new place in the list of manuals of applied psychology. It is an attempt to describe the methods of the psychological laboratory with reference to their employment in the diagnosis of mental disease, and places at the command of the clinician the technique and the instruments of the modern psychological laboratory in a way which has never been done before. It is a handbook for the consulting psychologist in the institutions for mental defectives, and will also be a valuable aid in the teaching of psychology to medical students. The selections seem to have been made with excellent judgment, and the presentation is clear and concise.

PATRICK GEDDES AND J. ARTHUR THOMSON. *Evolution.* ("Home University Library," No. 14.) New York: Henry Holt & Co., 1911. Pp. xiv, 256. 50 cents net.

A more popular account of evolutionary theories. The chapters are helpfully organized on the topical plan. The selection and treatment of concrete illustrations will be especially interesting to students of educational method. The authors do not shrink from social and ethical interpretations.

W. H. GROVES. *The Rational Memory.* Second Edition. New York: The Cosmopolitan Press, 1912. Pp. 172. $1.35.

From this curious book one would never surmise that psychologists had made any investigations of memory during the past twenty years. The author preaches cultivation of the memory along the lines of Loisette and Pick, but evinces no capacity for systematic presentation. The work is a *mélange* of quotations from all sorts of popular sources, and ranges from the subconscious to the value of deep breathing.

S. J. HOLMES. *The Evolution of Animal Intelligence.* New York: Henry Holt & Co., 1911. Pp. 296.

The author's aim is "to give a fairly clear conception of the activities upon which intelligence is based, to show how intelligence is related to these activities, and to sketch the general course of the evolution of intelligence in the animal kingdom." Chapters of special interest to the educational psychologist are those on Reflex Action, The Evolution of Instinct, the Non-intelligent Modifications of Behavior, The Intelligence of Mammals, and The Mental Life of Apes and Monkeys.

MAX MEYER. *The Fundamental Laws of Human Behavior. Lectures on the Foundations of any Mental or Social Science.* Boston: Richard G. Badger, 1911. Pp. 241. $2.00 net.

In the seventeen lectures of this interesting book the author attempts to answer the question, "What are the simplest assumptions necessary and sufficient to explain hypothetically the facts of human behavior as dependent on the function of the nervous system?" A greatly simplified description of the nervous system, as found in lower animals and man, is followed by schematic representations of the neural activities underlying reflexes and instincts, and of the modifications which these neural connections undergo in the process of learning. The establishment of motor control in eye and head co-ordinations, in the activities of locomotion, and in speech, is illustrated by numerous ingenious diagrams. The book is the most noteworthy attempt that has yet been made to trace in detail the neural changes involved in learning, and should be carefully studied by all those who are interested in an account of the physical basis of education.

C. AINSWORTH MITCHELL. *Science and the Criminal.* Boston: Little, Brown & Co., 1911. Pp. xiv, 237.

This volume is uniform with Hollander's Hypnotism and Suggestion, already noticed in these columns, and akin to it in style. It is a popular account, compiled from varied sources, of various "ways

in which scientific discovery has been utilized in the struggle between society and the criminal." Deals with systems of identification, handwriting, sympathetic inks, police dogs, poisoning trials, identification of blood and hair and the like. The author has apparently worked at second or third hand: he uses a newspaper account of an experiment by McKeever, for instance, instead of referring to the work of Stern, Binet and other authorities when discussing methods of testing the reliability of witnesses.

MARIA MONTESSORI. *The Montessori Method of Scientific Pedagogy as Applied to Child Education in "The Children's Houses."* Translated from the Italian by Anne E. George, with an introduction by Professor Henry W. Holmes. New York: Frederick A. Stokes Company, 1912. Pp. xlii, 377. $1.75 net.

Teachers and others who have recently heard much of the Montessori method will welcome this authoritative and detailed presentation of the author's views. In the present translation the author has embraced the opportunity to revise the Italian edition in some respects and to add two new chapters. The book is plentifully illustrated and, while lacking an index, is provided with a detailed and analytical table of contents.

PAUL R. RADOSAVLJEVICH. *Professor Boas' New Theory of the Form of the Head—a Critical Contribution to School Anthropometry.* Reprinted from the American Anthropologist (N. S.) 13: July-September, 1911. No. 3. Pp. 394-436.

To be reviewed.

C. ARCHDALL REID. *The Laws of Heredity.* New York: The Macmillan Company, 1910. Pp. xi, 548. $5.50 net.

By the author of *The Principles of Heredity*, but covering a wider scope. The use of facts familiar to every one and the clear style of presentation make this a valuable book for the general reader who wishes to obtain an authoritative statement of heredity.

DAVID EDGAR RICE. *Visual Acuity with Lights of Different Colors and Intensities.* Archives of Psychology, No. 20, February, 1912. Pp. 58.

Unit acuity is attained with an intensity of 40 to 50 meter-candles. A gradual reduction to 10 meter-candles causes a slow decline to 75 per cent. of unit acuity. Further reduction in intensity is accompanied by a rapid fall in acuity. Red light is decidedly more efficient than blue or green.

RAOUL RICHTER. *Religionsphilosophie.* Leipzig: Ernst Wiegandt Verlagsbuchhandlung, 1912. Pp. 178. M. 3. Geb. M. 4.

Philosophy has a right to concern itself with religion only in so far as this term denotes an attitude of mind, which is universally valid for all thinking beings. It is this "pure" or formal religion, in contrast to the various positive religious beliefs that are held, which the author here discusses. Among the topics considered are religion and knowledge, revelation, faith, the relation of religion to art and morality, the theory of reality, the problem of God, and the religious attitude of man to God, the world, and his fellow man.

L. A. ROBINSON, PH. D. *Mental Fatigue and School Efficiency.* (Bulletin No. 2, Vol. 5, December, 1911, Winthrop Normal and Industrial College of South Carolina.) Columbia, S. C.: The R. L. Bryan Company, 1912. Pp. 56.

An experimental study of diurnal efficiency, overpressure, effects of recesses, gymnastics, singing, lunches, etc. Further notice will follow.

WILLIAM C. RUEDIGER. *Teachers' Councils.* Reprinted from Education, March, 1912.

That the public is not yet inclined to take the matter of education as seriously as it merits is indicated by the fact that little or no use is made of the expert knowledge of the teacher in the direction of school affairs. Every board of education should have some means of hearing directly from its teachers on every matter of educational policy. The establishment of teachers' councils has in some localities served this function.

C. W. SALEEBY. *Woman and Womanhood. A Search for Principles.* New York: Mitchell Kennerley, 1911. Pp. 398. $2.50 net.

Those who have read with profit Dr. Saleeby's *Parenthood and Race Culture,* his *Health, Strength and Happiness,* and other books, will be prepared to find in this volume a stimulating and timely treatment of an important topic. It treats of the purpose of womanhood, the education of girls, the conditions of marriage and divorce and similar questions. The cardinal principle set forth is that "Woman is Nature's supreme organ of the future." This principle, the author believes, is "an infallible criterion of right and wrong in all proposals for the future of womanhood."

RAYMOND SALEILLES. *The Individualization of Punishment.* Boston: Little, Brown & Co., 1911. Pp. xliv, 322.

This volume, which is the fourth in the valuable Modern Criminal Science Series, published under the auspices of the American Institute of Criminal Law and Criminology, is translated from the sec-

ond French edition by Rachel Jastrow. It contains an introduction to the original edition by Gabriel Tarde, and an introduction to the translation by Roscoe Pound. Further comment will follow.

EDMUND C. SANFORD. *The Function of the Several Senses in the Mental Life.* Reprinted from the American Journal of Psychology, Vol. 23, January, 1912. Pp. 59-74.

An interesting survey of the sensory basis of our thinking.

J. W. SEARSON AND GEORGE E. MARTIN. *Studies in Reading. Fourth Reader.* Pp. xii, 299. *Fifth Reader.* Pp. xvi, 280. Chicago and Lincoln: University Publishing Company, 1911.

These volumes mark a distinct advance in the development of school readers. The selections are, in the main, literary wholes rather than fragments. Each selection is given an effective setting by means of a brief introduction. Notes, exercises and a list of related readings also accompany each selection.

ALFRED DWIGHT SHEFFIELD. *Grammar and Thinking.* New York: G. P. Putnam's Sons, 1912. Pp. 193. $1.50 net.

A praiseworthy attempt to analyze sentence structure from the point of view of the thinker. The author shows familiarity with Wundt's work on the psychology of language, and with James' discussions of the psychology of meaning. "His volume is addressed to teachers and serious students in both classical and modern language study who would follow the ideas they work with into their background of psychology and logic."

GEORGE DRAYTON STRAYER. *A Brief Course in the Teaching Process.* New York: The Macmillan Company, 1912. Pp. 315. $1.25 net.

This is a practical book, intended to "help teachers grow in skill in the art of teaching and in power to appreciate the work in which they are engaged." Typical chapters discuss the importance for the teaching process of securing and holding attention, the drill lesson, the inductive and deductive lessons, the study lesson, the recitation lesson, the art of questioning, and measuring results in education. In all the discussions free use is made of the results of studies in educational psychology and in experimental pedagogy, and these are applied to the concrete problems with which the teacher is confronted. A feature of the book is the abundance of selected lesson plans.

EDWARD L. THORNDIKE. *Education. A First Book.* New York: The Macmillian Company, 1912. Pp. ix, 292. $1.25 net.

This admirable book, written in Professor Thorndike's terse and vigorous style, sets forth simply and clearly the fundamental ideas, aims and tendencies of current educational activity. While intended

for students beginning work in education, we believe it will also be of great value to the general public, in that it will give an orientation in the somewhat confusing mass of detail which is rapidly being accumulated by scientific investigators of educational problems. The chief topics are the aims, the material, the means, the methods, and the results of education. Such a general survey from the pen of one of the leaders in modern educational studies will help to spread an appreciation of the value of experimental work in education, and we bespeak for the book a wide range of readers.

HARLAN UPDEGRAFF. *A Study of Expenses of City School Systems.* Bulletin No. 473. Washington: Bureau of Education, 1912. Pp. 96.

HORACE EMORY WARNER. *The Psychology of the Christian Life.* New York: Fleming H. Revell Company, 1910. Pp. 401.

This attempt to apply the method of modern psychology furnishes much information about Christian life, but the psychological explanations and interpretations are superficial.

FREDERIC LYMAN WELLS. *The Relation of Practice to Individual Differences.* Reprinted from the American Journal of Psychology, Vol. 23: January, 1912. Pp. 75-88.

The ability to improve with practice is a function of original and inherited nature, rather than of experience or environment. Practicability, not practice, is the mark of superiority. In a broader sense not education, but educability distinguishes the man of power.

W. H. WINCH. *Mental Fatigue in Day School Children, as Measured by Arithmetical Reasoning.* Reprinted from British Journal of Psychology, Vol. 4: December, 1911. Pp. 315-341.

This interesting study had for its starting point the question: "What difference does it make in the rate of improvement whether a class studies arithmetical reasoning the first thing in the morning or the last thing in the afternoon?" With the same amount of study groups of equal ability showed from three to twelve per cent. more gain in the morning than in the afternoon. The difference was greatest with the younger children and decreased with age.

R. S. WOODWORTH AND FREDERIC LYMAN WELLS. *Association Tests.* Psychological Monographs, Vol. 13, No. 5, Whole No. 57. December, 1911. Pp. 85.

This monograph is part of the report of the committee of the American Psychological Association on the standardization of procedure in experimental tests, and contains a discussion of cancellation tests, addition tests, color and form naming tests, the substitution test, various tests of logical relations, the understanding of instructions, and the free association experiment.